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ABSTRACT

This report examines the plans and aspirations of high school students for their educational and vocational future and the influences having a role in shaping those decisions. This is accomplished by use of a large national sample of males and females, along with analyses that incorporate both descriptive and causal approaches. Specific priorities of student choice and the potential influences stemming from family, peers, school, and skill-achievements that shape educational and vocational decisions are described. In addition, assessment is made of the relative contributions of each of those personal-demographic characteristics and causal modes by which they are likely to exercise their impact. Not only should such information provide clues for shaping high school curricula, or individualizing courses and programs, it should also aid in guiding students along more effective educational paths through an understanding of the consequences of their decisions. Thus, a major focus of the analysis is on identifying, where feasible, the comparative differences between plans and aspirations of students enrolled in differing curricula and unique influences that impinge on such decisions for members of each group. (Author/RC)

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A VOCATIONAL REEVALUATION OF THE BASE YEAR SURVEY OF THE HIGH SCHOOL CLASS OF 1972

PART III: ASPIRATIONS AND PLANS OF HIGH SCHOOL STUDENTS: THE ROLE OF ACADEMIC, SOCIAL, AND PERSONAL CHARACTERISTICS

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Educational Testing Service

February 1975

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Aspirations and Plans of High School Students: The Role of Academic, Social, and Personal Characteristics

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Background and Purpose

There has been general agreement, from prior research, that the expressed plans and aspirations of high school students can serve as an important source of information in attempts to understand their educational and vocational behaviors. For the most part, student desires and expectations for the future have been conceived of as intervening attitudinal constructs linking social background and ability to post-high school choices or attainments. Reasonable evidence to support the value of that mediational view has been found in such longitudinal efforts as that of Berdie and Hood (1965) at the univariate level, as well as in the more complex multivariate recursive models of Duncan, Haller, and Portes (1968), Sewell, Haller, and Portes (1969), Sewell, Haller, and Ohlendorf (1970), and Williams (1972).

Although the specific independent variables chosen to define social influences on student occupational and educational decisions can vary widely in different studies, the four major categories to which most of them can be assigned, conveniently, have consisted of: home and family measures (e.g., SES variables of parental education, occupation, or financial status; parental expectations and attitudes toward education), personal characteristics of the student (e.g., cognitive skills, academic achievements, self-expectations),

characteristics of the student's peers or schoolmates (e.g., peer aspirations, planning decisions, and social status), and, finally, the characteristics of the school attended by the student (e.g., the expectations and educational level of school personnel, course offerings, available facilities, and school locale and social status). From an extensive literature on this topic--especially in the area of educational plans and aspirations (Beezer & Hjelm, 1961; Kuvelsky & Reynolds, 1970)--it is possible to glean some of the findings that have dealt with the variables in each of those four categories, and their ostensible influence on the student's decision-making processes. A general observation, in a review of the literature through the early 1960's, was that "one is immediately impressed by the almost completely positive results reported" for the relationships of a host of variables to post-high school plans of students (Berdie & Hood, 1965, p. 16). (Whether this was attributable to excellent foresight in choice of variables or excellent hindsight in neglecting negative results was left unresolved.) The authors also noted that sex, where it had been considered, tended to result in important differences. Both points remain entirely applicable to the literature since that period.

In essence, when application of the family-home-SES triad of independent variables is examined, zero-order correlations are found to be significant and to range consistently from the low .20's to the high .30's (Bordua, 1960; Sewell et al., 1970; Sewell & Shah, 1967). Even when first-order r's are utilized, or interaction effects considered, the significance of the relationships remains (Berdie & Hood, 1965). School correlates in the form of direct influence by

school personnel, the SES composition or "context" of the school, its patterns of curricular and extracurricular activities, and school size, have shown considerable variation in the level of first-order relationships obtained. These have generally ranged from negligible to the mid-.20's when some form of student academic achievements and cognitive skills are controlled (Boyle, 1966; Herriott, 1963; Kandel & Lesser, 1969; Meyer, 1970; Michael, 1961; Nelson, 1972; Spady, 1971; Wilson, 1959).[1]

Probably the most widely studied aspect of potential influence on student plans and aspirations has been based on variables subsumed under the category of cognitive-intellectual or academic achievements (Beezer & Hjelm, 1961). The mechanisms through which those variables might operate as mediators requires further clarification in recursive models, but there is no argument as to their consistency in producing significant zero-order correlations with magnitudes ranging from the .20's to the .50's. Variations in the findings are most often attributable to gross differences in sample characteristics (e.g., geographic or SES homogeneities) and the nature of the intellectual ability measures utilized.

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[1] It can be noted that extremely high zero-order r's have been found for influence of school personnel--e.g., r's of .40's to .60's between student educational plans and teacher's educational expectations, as in Williams' (1972) study--when based on the student's report of perceptions of school personnel expectations for him. In other instances, the data may be derived from direct report of school personnel. Wide variation in first-order r's or resulting path coefficients are likely to be fostered by such clearly differing forms of information.

Typical examples of zero-order r's, obtained with differing samples and measures, are seen in a study of Wisconsin students by Sewell, et al. (1970) for whom correlations are found in the low to mid-.40's between a standardized mental ability test and educational plans, along with r's in the low .40's to low .50's between class rank and level of student plans (in the latter case, tending to be uniformly higher for students from larger communities than for a subgroup of those living on farms). Williams' study of educational plans for Canadian high school students (1972) typifies the results found at distinctly lower correlational ranges between educational decisions and a standardized test of verbal ability (r's = low .20's), as well as for two measures of academic achievement (r's = mid-.20's). In a study by Brookover, Erickson, and Joiner (1967), academic achievement (GPA) in relation to educational aspirations and educational plans, using several high schools in one midwestern city, results in r's that lie somewhere between the values found in the other two studies (i.e., mid-.20's to low .30's for samples of 10th and 11th grade boys). Not surprisingly, where the highest of the zero-order r's were found (Sewell, et al., 1970), the resulting influence on partial regression equations leads the investigators to report a greater and more "central" contribution of an academic performance measure to their path coefficients than tends to be found in other studies.

Peer influences as the remaining category of variables widely subjected to examination has, for some of its most effective uses,

appeared in conjunction with assessment of the influence of so-called "significant others" (e.g., parents and teachers). In weighted combination, such variables have produced substantial zero-order r's (.50's to low .60's) and show evidence of a critical role in a causal model that incorporates not only measures of plans and aspirations, but the more important dependent variables of educational and occupational attainments (Sewell, et al., 1970). By itself, the variable of peer educational choices results in moderate zero- and first-order relationships (r's = .30's to .40's), whether based on the student's perceptions of peer plans and aspirations or direct report by his peers (Campbell & Alexander, 1965; Haller & Butterworth, 1960; Herriott, 1963; Williams, 1972). Although it seems that parental influences overshadow those exercised by peers, in any hierarchical arrangement of the variables (Kandel & Lesser, 1969), there is evidence to support, in sum, the greater influence of peers when compared with numerous school social-status characteristics (Bain & Anderson, 1974).

The independent variables discussed above as potential sources of influence, although not always consistent in application, can at least be reasonably well defined in terms of the measures represented. On the other hand, measures said to represent plans and aspirations, as dependent or criterion variables, have too often been ill-defined, if not specifically misnamed, and have probably made a major contribution to disagreements in study results. Brookover, et al. (1967) have criticized researchers for failure to distinguish between the two theoretical concepts or to define, clearly, the operations for their measurement. If plans are logically viewed as expressions of student

"intent" or "expectation" and aspirations as "desires" or "wishes," there is not only frequent neglect in properly delineating these concepts from study to study, but inconsistencies in their appropriate designations within the same study. Use of a designation such as "educational aspirations" can, typically, be found for a variable, even though its description indicates that it is based on a specific query regarding the student's educational plans, or intent. Similarly, what is described as an aspirational measure can unintentionally enter into later discussions of findings as if it represented a planning concept (Sewell, et al., 1970, and Williams, 1972, provide two examples of numerous studies in which this confusion appears).

Beyond the rational basis for a plans-aspirations distinction, there is empirical evidence that the two do not represent the same construct or produce the same results. Thus, when questions regarding future intentions and desires are factor analyzed, two definable dimensions result that generally conform to the hypothesized plans-aspirations concepts (Weiss, 1961). Brookover, et al. (1967), who find that the educational plans measure is more highly related to academic achievement and SES--for both zero- and first-order r's--than is an educational aspiration measure, attribute much greater predictive potential to the plans measure.

Another shortcoming in application of the plans-aspiration concepts as dependent (or intervening) variables, has been the overriding emphasis on the educational aspect of student decisions, with much of the effort centered on college-going as the dependent measure. Where occupational or vocational plans and aspirations indices are applied, the measures

used can suffer from the same inconsistencies in distinction for which the educational ones have been criticized, as well as few attempts to contrast the relative explanatory value of each.

Other oversights in choice and application of variables for a number of the widely-cited studies have involved neglect of sex differences, despite recurring evidence of their importance; the use of samples from relatively restricted geographic locales (at worst a single city and at best a single state) with further restrictions resulting from entirely urban or rural samples and a narrow SES range (Beezer & Hjelm, 1961; Berdie & Hood, 1965). In addition, the more recently applied recursive techniques for determining causality have relied on single-variable determinants, based on least squares solutions and exclusive use of observed measures with their unavoidably large error components. There has been no known attempt to apply the more powerful technique of a maximum likelihood solution and the use of unmeasured variables as causal determinants in path models (Jöreskog & van Thillo, 1972).

The purpose of the present study is to examine the plans and aspirations of high school students for their educational and vocational future and the influences that may have had a role in shaping those decisions. This is to be accomplished by use of a large national sample of males and females, along with analyses that incorporate both descriptive and causal approaches.

Specific priorities of student choice and the potential influences stemming from family, peers, school and skill-achievements that shape educational and vocational decisions are to be described. In addition,

an assessment will be made of the relative contributions of each of those personal-demographic characteristics and the causal modes by which they are likely to exercise their impact. It is important that those effects not only be considered separately for males and females (as previous research findings would dictate) but, in light of the increasing role of the differentiated curriculum in many high schools, it can be especially valuable to understand the educational needs of members of different curriculum subgroups if, as has been claimed, "the effectiveness of differentiation depends on the school's having adequate knowledge of the student's objectives and of the influences determining his decisions" (Berdie & Hood, 1965). Not only should such information provide clues for shaping high school curricula, or individualizing courses and programs, it should also aid in guiding students along more effective educational paths through an understanding of the consequences of such decisions (Spady, 1971). Thus, a major focus of the analysis will be on identifying, where feasible, the comparative differences between plans and aspirations of students enrolled in differing curricula and unique influences that impinge on such decisions for members of each group.

Method

Sample

The study sample is derived from the 1972 survey of the senior high school class of that year and obtained as base-year data for the first stage of a longer term study, the purpose of which is outlined in Part I of this final report (Creech, 1974). That document also describes in detail numerous characteristics of the sample, as do initial analyses and

data summaries presented by Hilton and Rhett (1973). In addition, the 107-item questionnaire administered to the students and designated as the Student Questionnaire (SQ) is presented in the Part I report, along with descriptions of the various questionnaire sections, response branching possibilities, and response rates for the various branching paths.

Those items from the Student Questionnaire that are utilized for analysis in this study are shown in Appendix A and are designated by their originally-assigned numbers in the questionnaire. All applicable plans and aspirations items chosen contain closed-end response alternatives, except for the one item used to define the level of student vocational plans. That major variable was available only from a single response, open-ended item. Since the total study sample was very large (N in excess of 15,000), it was practical within the available time and resources to hand-score the Level of Vocational Plans (LVP) variable for no more than 950 randomly selected cases. Thus, for all analyses in which the LVP variable is incorporated, N cannot exceed 950. Sample sizes also vary throughout the analyses, in other instances, because of missing data (e.g., failures to respond) or special subgroup membership dictated by the questionnaire design and branching requirements.

Study Plan and Analytical Approach

The analyses are divided into two major results sections. Section I deals with what is largely a descriptive approach incorporating univariate analyses of three types: the first involving chi squares for those items where scoring yields only frequency distributions, the second dealing with analysis of variance (ANOVA) where there are scaled item

responses (derived mostly from 3-point response scales), and the third with zero-order r's based on variables of background and personal characteristics in relation to student levels of occupational and educational aspirations and plans. Because of the large sample sizes, statistical significance was often readily found--especially in mean comparisons and levels of r that exceed zero--although many such findings may have little practical meaning in differentiating between groups or applying the r's in any predictive framework. As a consequence, and in order to contain the report within manageable bounds, the relative contribution of independent variables (i.e., Sex and Curriculum) was always determined for an item across all response categories, but only the most "important" or highly ranked single responses were subjected to univariate analyses of variance.[1] Similarly, background correlates are reported only for those variables displaying meaningful levels of potential predictive value (i.e., r's of approximately .20 or greater) and all values, of any sort, reported as significant refer to the .01 confidence level or better.

With regard to format, Results Section I is divided into two phases. The first of these deals with Student Plans and the other with Student Aspirations, each of which is, in turn, subdivided on the basis of General, Vocational, and Educational plans and aspirations. This is a format to which the available questionnaire material most readily lends itself and

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[1]Multivariate Analysis of Variance (MANOVA) was utilized to determine the overall relative contribution of the independent variables, based on their trace values. Those values represent the approximate proportion of between-groups variance corrected for within-groups variance, that is accounted for by the independent variable.

is intended to avoid previously cited confusions, engendered by failure to distinguish clearly between the plans and aspirations concepts. At the end of each of the results segments dealing with Student Plans and Student Aspirations, an Overview of results is presented for the most salient aspects of the findings.

Section II of the Results presents the findings obtained using path models and represents an attempt to gain additional insight into the causal structure underlying the complex relationships that could be inferred only indirectly from the zero-order correlations. This is to be done by the application of path analysis techniques using unmeasured variables (constructs) rather than the traditional experimental design procedures. It is felt that causal approaches, specifically developed for data collection in naturalistic situations (i.e., path analysis), are most appropriate because:

(1) The random assignment of subjects to well-defined treatments is not a reasonable expectation in naturalistic situations;

(2) Even if one could assume random assignment, the traditional multivariate experimental design procedures--which divide the total number of variables into one set of variables designated as independent that, in turn, are assumed to act on the remaining set designated as dependent--is an unrealistic and oversimplified model. That is, a more realistic model, such as path analysis, allows the dependent variable not only to be

acted upon, but to act on others as well.

Furthermore, the interest here is in a particular solution to the path analysis model (i.e., a solution that takes into consideration errors in variables). In most naturalistic experiments which use psychological measures, the variation due to errors in measurement (reliability and validity) is often large in comparison with the "true" variation. Therefore, in order to improve one's chances of detecting significant relationships when they are indeed present, one must resort to techniques which reduce errors in variables and thus increase the power of the analysis.

Jöreskog's (1970, 1972) maximum likelihood estimation procedure for his structural equation model (LISREL) provides estimation procedures for obtaining effects and/or relations between true variables or constructs (i.e., error-free variables). This, of course, increases the chances of accurately estimating path coefficients.

Another extremely important property of LISREL is the simultaneous estimation procedures developed by Jöreskog. That is, "the loadings" of the observed variates on their respective constructs are not simply based on their intercorrelations, but take into consideration their relationships with other variables in the system. Thus, the loadings are not just a function of internal consistency but also of the consistency of their relationship with other external variables in the system. Relationships among these error-free constructs (e.g., the relationships between socioeconomic status, SES, and academic achievement) are not simply corrected for internal consistency reliability but for validity as well. The usual correction for attenuation, by

contrast, is based only on internal consistency estimates of reliability which, in general, results in an overestimate of the reliability because of shared method variance and does not use any external information in estimating "true constructs." What should be of greater concern is the relationships between the true (reliable plus valid) components of the observed measures. In short, conclusions should be drawn only after taking the proper steps to remove the noise from the system which is likely to mask real relationships.

The intent is to develop and test the structural equations describing two complex models of the individual and sociocultural determinants of constructs such as: (1) parental expectations, (2) self-esteem, (3) educational plans, and (4) academic motivation. These structural models will be compared across race and sex. Jöreskog's maximum likelihood estimation procedures will be used to estimate the relationships between the above constructs (error-free) variables, and thus make it possible to identify relationships heretofore attenuated, since they were estimated by the usual path analysis procedures which, in turn, are based on fallible observed scores. As far as is known, this will be the first time that the Jöreskog structural equation model with unmeasured variables will be applied to such a complex model based on real data incorporating student educational decision variables.

With the causal model available, it is felt that the variable of Race is a feasible one to introduce into the analyses of Section II. This is because its complex interdependencies can be more readily estimated and intelligently understood than would have been possible with the univariate analyses that had, as their primary intent, a relatively simplified

understanding of Sex and Curriculum effects. Race has rarely been considered in any of the educational plans-aspirations literature (e.g., only one study incorporating racial comparisons was found by Berdie and Hood [1965] in their literature review) and is generally assumed to be so closely interwoven with an SES construct that it would add little to the understanding of background influences on plans and aspirations. Nevertheless, that assumption remains to be demonstrated with comprehensive path models and it is believed that separate analyses by race are worth a more intensive examination.

Results

Section I: Descriptive Analysis

Student Plans

A. General Plans

As a form of future decision-making this represents a category of overall intentions on the part of high school students that deals with any, or all, areas of post-secondary school endeavors (e.g., work, schooling, marriage, travel, entering the military, etc.). The data available for analyses deal largely with goals or objectives contemplated during the more immediate post-high school period and influences on those planned objectives as perceived by the student. The primary and most direct question is one of: What types of short-term general plans are predominant among high school seniors for the immediate future (i.e., one year post-high school)?

For the ten response categories shown in Table 1 (from Student Questionnaire, Item #31) there are two distinctly dominant intentions chosen by students in their post-high school planning.

The first is to "attend a four-year college" (33.6%) and the second is to "work full time" (25.6%). Overall chi-squares for the ten plans categories, when subdivided by variables of Sex ($\chi^2 = 919$) and Curriculum ($\chi^2 = 5397$), as shown in Table 1, are, of course, highly significant at well beyond the .01 level. The source of the differences between the sexes is seen to be attributable in large measure to what should be expected in response categories of "military" and "homemaker." Whereas, there is little

Table 1

Distribution of Responses for General Plans;

by Total Group, Sex, and Curriculum Enrollment
(N = 15,990)

Planned Activity (1 year Post High School)	Total	Sex		Curriculum		
		M	F	General	Academic	Vocational
1. Work Full Time	25.6%	12.4%	13.2%	10.4%	3.9%	11.3%
2. Enter Apprenticeship or OJT	2.8	2.0	0.8	1.4	0.5	0.9
3. Military Service	3.6	3.1	0.4	1.5	1.1	1.0
4. Full-Time Homemaker	2.8	0.0	2.8	1.3	0.4	1.1
5. Take Voc. or Tech. Courses	9.1	3.7	5.4	3.5	2.1	3.6
6. Academic Courses at Jr. College	10.8	5.4	5.4	3.4	6.1	1.3
7. Tech-Voc. Courses at Jr. College	5.4	2.7	2.8	1.8	2.1	1.4
8. Attend 4-Year College or University	33.6	17.1	16.5	5.2	26.9	1.6
9. Work Part Time	2.1	1.0	1.2	1.0	0.5	0.7
10. Other (Travel, take break, no plans)	4.1	2.4	1.7	1.8	1.0	1.3

practical difference between males and females for the two dominant categories of "four-year college" (17.1% male; 16.5% female) and "work full time" (12.4% male; 13.2% female).

It is between the three curriculum subgroups, however, where the differences are comparatively outstanding. The major contribution to the chi-square for these comparisons is seen to originate in a much greater proportion of the Academic curriculum group choosing "four-year college" for their first-year plans (26.9%), while the dominant choice for the General and Vocational curriculum groups falls into the "work full-time" category (10.4% and 11.4%, respectively).

The overall picture of dominant post-high school activities chosen may be interpreted as both expected and logical, in terms of the perceived possibilities or options that their educational background imposes on students of each curriculum group (i.e., General and Vocational students are "expected" to go to work or, at most, into some form of technical training and not on to a four-year college).

Beyond this descriptive look at the distribution of post-high school plans might be a related and, perhaps, more informative concern with how the student arrives at such decisions. More precisely--and within the limitations of the available information--the question to be considered is: Which individuals are seen by the student as exercising the major influence on post-high school plans? The ten response categories (SQ Item #14) and the mean degree of influence of each source, based on a three-point scale, are shown in Table 2.

Table 2

Perceived Sources of Influence
on Student General Plans
(Overall Means; N = 15,586)

	Response Category	Mean
1.	Your Parents	2.33
2.	Relative (Other than Parents)	1.71
3.	Guidance Counselor	1.56
4.	Teacher	1.51
5.	Principal or Assistant Principal	1.11
6.	Clergyman	1.14
7.	State Employment Service Officer	1.09
8.	Other Adult not mentioned	1.72
9.	Friends your own age	2.00
10.	Yourself	2.88

As would be expected on the basis of the large sample size (N = 15,586 computation of a MANOVA (here, as for subsequent analyses throughout the report) indicates that the response category means are significantly different from one another, in the extreme. Any single category mean is also significantly different from the mean of the category closest to it in value (e.g., a mean difference of approximately .02 is significant at the .01 level). In addition, since this and all subsequent MANOVAs produce significance for the Sex and Curriculum variables, overall, it is of little value to repeat a finding that holds throughout. What is of primary

interest, however, and will be commented on from each MANOVA, are the relative contributions of Sex and Curriculum to the item score based on their trace values. For the present data, the MANOVA indicated that the Curriculum variable (trace = .55) accounts for about four times more of the contribution to the mean differences than does Sex (trace = .14).

Of more immediate value to an understanding of student plans is the relative weight assigned by the students to those perceived sources of plans influence and any possible differential effects for the dominant, or most important, of those influences when examined by Sex and Curriculum subgroup membership. Major influences on post-high school plans, as reported by the total student sample, are Self (M = 2.88), Parents (M = 2.33) and Friends (M = 2.00), which stand distinctly apart from the other mean values, and are underscored in Table 2. The differential role of each of these three dominant influences becomes clearer in the univariate (ANOVA) analyses below.

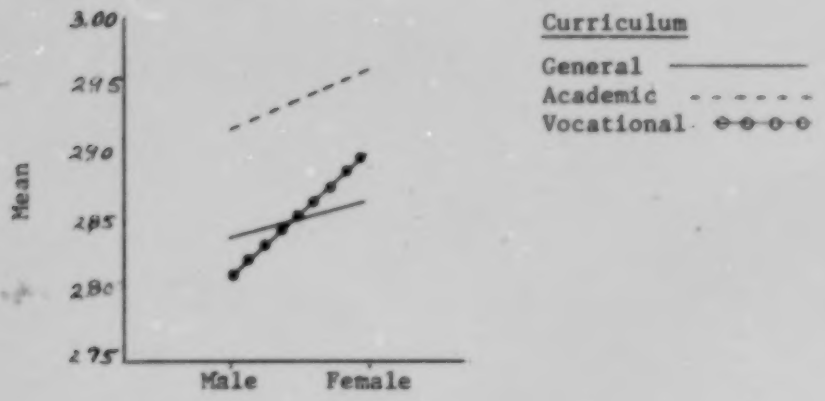
· Influence of Self - is seen in the ANOVA summary to produce highly significant mean differences, when comparisons are made between males and females, and between students enrolled in different high school curricula, as well as a significant interaction effect for the Sex and Curriculum variables.

Source	Mean Square	df	F-ratio
Sex (S)	9.8	1	75:1*
Curriculum (C)	13.8	2	105.8*
Error	0.1	15,582	
S X C	0.9	2	7.0*

*All F-ratios shown for this and subsequent ANOVAs are significant at .01 level.

Females see themselves as exercising greater personal influence over their general plans (M = 2.91) than do males (M = 2.85), with an even more highly significant difference found for this response category on the basis of curriculum group membership (General group M = 2.85, Academic M = 2.94, and Vocational M = 2.85). It is the students enrolled in the academic curriculum for whom their own initiative is seen as the strongest influence on their formulation of future plans, in comparison to the other two curriculum groups.

Some degree of qualification to that latter finding can be seen in the Sex by Curriculum interaction effect that shows up clearly in the following graph:



In essence, it is seen that although General and Vocational Curriculum students are similar overall in their response, there is a tendency for females in vocational programs to perceive themselves as more influential in formulating their future plans than are the females in the genreal curriculum group.

· Influence of Parents - as the second highest ranking source of influence on general student plans also shows significant differences by sex and

curriculum but no interaction effect.

Source	Mean Square	df	F-ratio
Sex (S)	11.2	1	26.9
Curriculum (C)	25.7	2	62.0
Error	0.4	15,582	
S X C	0.5	2	N.S.

Females see parents as having greater influence (M = 2.36) than do males (M = 2.30), with the Academic group (M = 2.41) perceiving more influence from this source in comparison to either General (M = 2.30) or Vocational (M = 2.28) students.

Influence of Friends - represents a poor third in the rankings of the ten sources of influence, with resulting F-ratios that again show significant differences for Sex and Curriculum variables and no significant interaction.

Source	Mean Square	df	F-ratio
Sex (S)	37.4	1	74.5
Curriculum (C)	12.2	2	24.4
Error	0.5	15,582	
S X C	0.1	2	N.S.

Although females (M = 2.05) remain the ones who say they are most influenced by this social source in contrast to males (M = 1.95), there is a change in the pattern of mean values for the three curriculum groups. It is now the students in the General and Vocational curriculum (M = 2.04 and 2.01, respectively) who see peers (friends) as the more influential source than do students enrolled in an Academic program (M = 1.96).

Another way of viewing the issue of sources of influence on General Plans--although less direct in approach--is to determine: those people

with whom students discuss their post-high school plans most frequently. The logical assumption is that those whom students feel are most influential should also be the ones with whom they are most willing to discuss their future plans. That assumption of behavioral consistency turns out to be essentially correct, as seen in the overall means for the nine response categories shown in Table 3 (SQ item #13).

Table 3

Student Discussion of Post-High School Plans
(Overall Means; N = 15,642)

Response Category	Mean
1. Your Parents	2.72
2. Relative (Other than Parents)	2.11
3. Guidance Counselor	1.97
4. Teacher	1.80
5. Principal or Assistant Principal	1.18
6. Clergyman	1.21
7. State Employment Service Officer	1.13
8. Other Adult not mentioned	1.93
9. Friends your own age	2.70

Friends and Parents--as in the case of perceived plans influences--are ranked at a level well above the remaining responses and represent the major student discussion sources for post-high school plans.

In the significant mean differences between the nine categories (SQ item #13), Curriculum contributes a somewhat larger relative proportion to that difference (trace = 0.83) than does Sex (trace = 0.49). Univariate

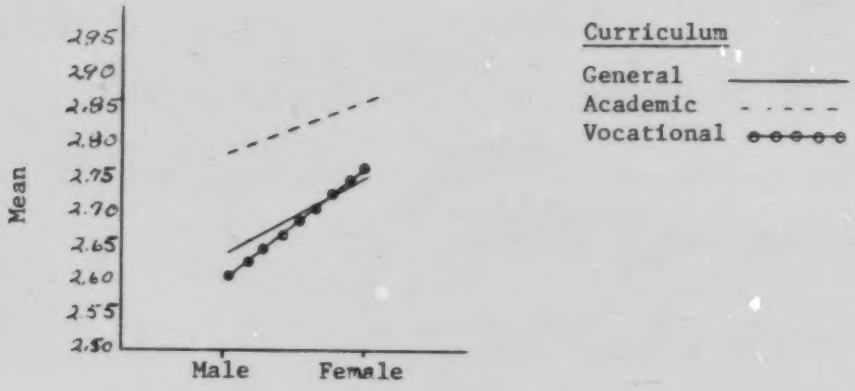
examination of the two major response categories yields the following specific role of the Sex and Curriculum variables:

· Discuss with Parents - exhibits highly significant Sex and Curriculum differences and a slightly significant Sex by Curriculum interaction.

Source	Mean Square	df	F-ratio
Sex	46.5	1	216.4
Curriculum	31.8	2	147.8
Error	0.2	15,638	
S X C	1.6	2	7.6

Female students display a much greater willingness to discuss plans with their parents (M = 2.79) than the males (M = 2.67), while students in Academic programs are far more likely to consult their parents on this topic (M = 2.82) than those enrolled in either the General (M = 2.69) or Vocational curricula (M = 2.68).

Here again, the overall interpretation must be tempered by a qualification found in the significant but minor degree of interaction for Sex and Curriculum. From the graph below, showing the interaction, it is apparent that despite the General curriculum students exceeding Vocational students overall in their willingness to discuss plans with parents, that conclusion does not apply to the females of the Vocational group who exceed the females of the General group in their willingness to do so (thus creating the "crossover" or interaction effect in the two curves).



· Discuss with Friends - shows a somewhat different pattern of results than the highest ranked parental response, with a much greater mean square contribution for Sex and comparatively little for Curriculum seen in the ANOVA summary (although both variables display significance at the .01 level). Also, as indicated in the ANOVA, there is no significant Sex by Curriculum interaction.

Source	Mean Square	df	F-ratio
Sex	95.1	1	383.9
Curriculum	16.3	2	65.6
Error	0.2	15,638	
S X C	0.7	2	N.S.

Females are--as for most other dominant planning influences on discussion sources--higher in their mean response (M = 2.78) than males (M = 2.62) and Academic students (M = 2.76) utilize this source to a significantly greater extent than students in the General (M = 2.68) or Vocational (M = 2.66) curricula. The relatively important role assigned to parents and peers is entirely in accord with

correlational findings (Kandel & Lesser, 1969) and also tends to confirm the greater importance that attaches to parental influence in comparison to that of peers (Riley, Riley, & Moore, 1961).

From even a cursory examination of Tables 1 and 2, it is apparent that school personnel, as a source of influence on student plans, is less than dominant. Nevertheless, a legitimate question may be posed regarding the nature and locus of the influence that they do exercise, whatever its magnitude. The issue can be framed from the available questionnaire information in terms of defining: the ways in which teachers and counselors have tried to influence the student's general plans following high school. The forms taken by that perceived influence and its extent are best summarized for the total sample from mean values for the five response categories of SQ item #15 shown in Table 4.

Table 4

Perceived Irfluence of Counselors and Teachers on Post-Secondary School Plans

(Overall Means; N = 15,562)

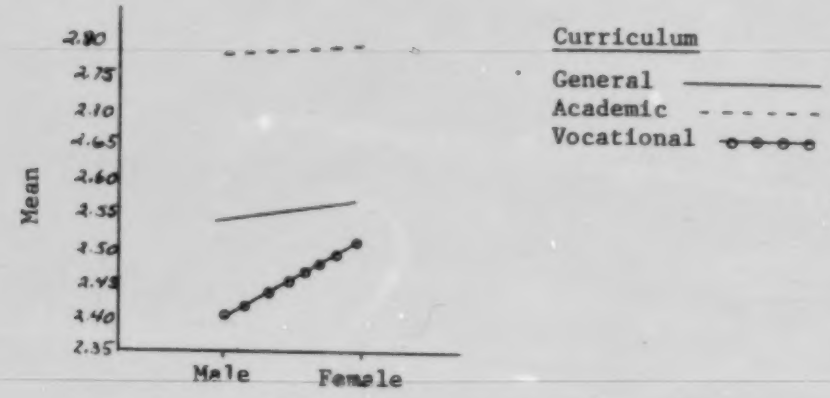
Response Category	Mean
1. Go to College	2.60
2. Go to Voc.-Tech., Business or Trade School	2.30
3. Enter Apprenticeship or O.J.T.	2.09
4. Enter Military	1.89
5. Get a Job Immediately after H.S.	2.05

Those areas of future planning on which the student perceives school personnel as having the strongest influence are: going to college (M = 2.60) and going on for formal skills, training in Voc.-Tech., business or trade school (M = 2.30). The top ranks belong clearly to those two categories, each of which differ very significantly from the remaining three. MANOVA results indicated a much larger contribution to those differences, across all response categories, resulting from curriculum group membership (trace = 3.89) in comparison to Sex (trace = 0.53)--a highly logical and predictable result from the item content. Separate ANOVA results for each of these two dominant response categories provide the necessary detail for better understanding of their role.

· Go to College - as a perceived area of attempted influence by school personnel, shows a significant difference for Sex. Girls claim that teachers and counselors tend to influence them to go to college more so (M = 2.63) than is claimed by boys (M = 2.57). Particularly striking in its significance of difference for this form of perceived decision influence, however, is the F-ratio for the Curriculum variable, with its indication of the far greater emphasis by school personnel on college-going perceived by the Academically enrolled group (M = 2.79), as significantly less by General students (M = 2.55), and least by those in the Vocational curriculum (M = 2.46).

Source	Mean Square	df	F-ratio
Sex	7.6	1	28.5
Curriculum	152.0	2	571.5
Error	0.3	15,558	
S X C	3.2	2	12.0

The significant interaction obtained (F = 12.0) and graphed below shows that the effect stems from a much lesser difference between females of General and Vocational curriculum, with regard to attempted school personnel influence, than is the case for males.



In other words, females in the Vocational curriculum report attempted influence by school personnel, to get them to go to college, that is disproportionally closer to the other curriculum groups than is the case for males. Whatever the curriculum group membership, school personnel seem to have a greater tendency to see the girls as potential college "material" even when they are in essentially a non-college-going curriculum.

- Go to Voc.-Tech., Business, or Trade School - as the other dominant area of plans, in which school personnel are seen as attempting to exercise influence, provides results which indicate no significant difference between males and females, but an expected and extremely significant difference over the three curriculum groups.

Source	Mean Square	df	F-ratio
Sex	1.7	1	N.S.
Curriculum	252.3	2	890.5
Error	0.3	15,558	
S X C	0.7	2	N.S.

The ordering of the means for the curriculum group is also exactly as would be anticipated. That is, the greatest degree of teacher and counselor influence in this Plans category is directed toward the Vocational students (M = 2.49), least toward the Academic group (M = 2.06), and intermediate attempts to influence students in the General curriculum group (M = 2.34).

From the Student Questionnaire responses on two separate items, there is an opportunity provided for a different (if somewhat indirect) approach to assessing the ways in which friends serve as an influence on student plans. This can be done by considering the correspondence between the student's responses to the item dealing with his own post-high school plans (SQ Item #13) and another with the approximately matching response categories of an item asking what "most of your close friends plan to do next year?" (SQ Item #16). The particular question for analytical consideration is one of: What are the planned post-high school activities for which the intentions of students are most closely matched with those that they attribute to their friends?[1] The matching

[1]The overall rankings of what students see their friends planning are almost identical to the relative ranking for their own plans responses (as previously presented in SQ Item #13).

activities that are closest to one another in terms of proportion of identical response between students and friends, for the different curriculum groups, are as follows:

Curriculum Group	Highest % Match with Friends	Planned Activity
General	48%	Enter Apprenticeship/OJT
Academic	79%	Go to College
Vocational	53%	Go to Work Full Time

The highest proportion of correspondence between a student's planned activities and those which he believes represent the plans of his friends, tends to occur for activities that are most appropriate and logical on the basis of curriculum group membership. In essence, students, especially Academic and Vocational groups, see their friends as planning primarily what they themselves also plan to do after high school (e.g., the Academic group not only plan to "go to college" primarily, as they are expected to do, but have friends whom they see as planning for the same dominant goal).

B. Vocational Plans

The information utilized here comprises that aspect of student purpose dealing with the intent to pursue particular post-high school careers or vocations, the characteristics on which students base their intentions for future employment and the factors that they see as influencing the setting of their vocational priorities. The initial descriptive question to be posed, with regard to vocational plans, is one of: Which general categories and status levels of occupational choice predominate in the vocational plans of high school students? The open-ended item used to obtain this information (SQ Item #96) permitted categorization by major occupational

groupings within status levels based on the NORC occupational status scales (Reiss, et al., 1961). For present study purposes (i.e., correlational analyses using a Level of Vocational Plans variable) it was appropriate to deal with the item responses on five-point status scale, ranging from a low of "1" (i.e., unskilled jobs such as laborer, car washer, etc.) to a high of "5" (i.e., professional jobs such as physician, lawyer, scientist, etc.). The distribution of vocational plans choices for the total group, by sex and by curriculum, is shown in Table 5.

Table 5

Distribution of Occupational Choice

for Student Vocational Plans at Five Status Levels

			Sex		Curriculum		
	Status Level	Total	M	F	General	Academic	Vocational
1.	Unskilled (Laborer)	2.3%	2.2%	0.1%	1.1%	0.6%	0.6%
2.	Semi-skilled (Service)	12.8	6.4	6.5	5.9	1.6	5.3
3.	Skilled (Crafts; Clerical)	17.2	11.5	5.7	6.2	3.8	7.1
4.	Technical-Managerial-Sales	48.7	16.2	32.5	13.0	25.6	10.1
5.	Professional	19.0	13.7	5.3	3.5	13.4	2.1

Chi-squares indicate enormously significant differences over the five career categories for the Total group ($\chi^2 = 533$) as well as in the distributions for the sexes ($\chi^2 = 218$) and curriculum groups ($\chi^2 = 270$). The results are largely self-explanatory, with students' vocational plans falling principally into the Technical-Managerial category and the Unskilled

jobs being those least frequently planned for (as should be the case for students about to receive high school diplomas). Between the sexes, the most striking difference is seen to lie in the greater proportion of females planning to enter status level 4 occupations (Technical-Managerial-Sales), while the males are, by comparison, markedly higher in the choice of professional and skilled occupations. The distributions for the three curriculum groups show an expected preponderance of the vocational plans for Academic students falling into the higher level Technical-Managerial-Sales and Professional categories, while General and Vocational curriculum students predominate (appropriately) in the Semi-skilled and Skilled categories.

Following from these results, a related question can be posed that concerns itself with how these vocational choices come about. Specifically, from present study data, the question that can be asked is: Which factors does the student perceive as most influential in shaping his long-term vocational choices? (SQ Item #36) Mean values for the total group for each of the perceived influences on Vocational plans are shown in Table 6.

Table 6

Perceived Sources of Influence on
Student Long-Term Vocational Plans
(Overall Means; N = 15,269)

	Response Category	Mean
1.	Work Experience in the Area	1.76
2.	Relatives or Friends in that Work	1.60
3.	Job Openings Available	2.04
4.	Matches Hobby or Interest	1.84
5.	Good Income	2.17
6.	Job Security and Permanence	2.27
7.	Important and Interesting Work	2.75
8.	Freedom to Make Own Decisions	2.33
9.	Promotion and Advancement in Long Run	2.28
10.	Meet and Work with Sociable, Friendly People	2.51

A major portion of the highly significant mean differences, as determined by MANOVA, stems from Sex as a factor that produces a larger contribution to those overall differences (trace = 1.1) than does Curriculum (trace = .74). The dominant considerations that serve to influence vocational plans as seen by students in general (and underscored in the Table) are: that the work be "important and interesting"; that it be "with sociable, friendly people"; and that there "be freedom

to make one's own decisions." (It might be noted that job security and advancement categories--although of significantly lower rank than the top 3 and approximately tied for fourth place--are rather close to the 3 dominant ones and reflect a degree of importance to students in terms of absolute scale meaning.)

Detailed analyses of the several dominant influences are as follows:

- Important and Interesting Work - results in significant differences between the sexes and the curriculum groups, but no significant interaction between the two.

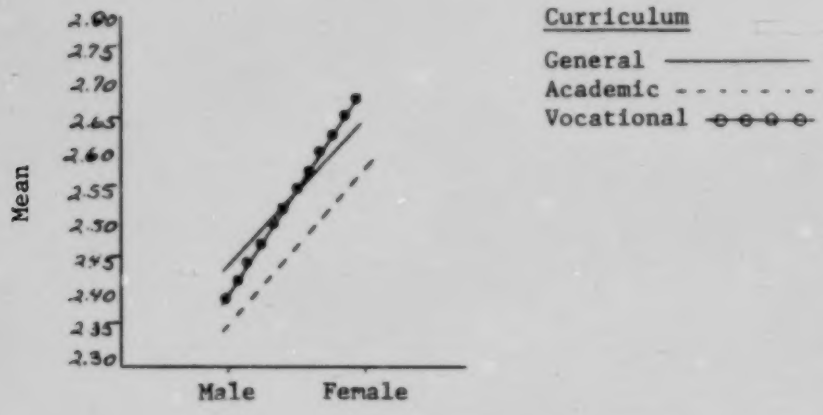
Source	Mean Square	df	F-ratio
Sex	30.5	1	137.1
Curriculum	18.0	2	81.1
Error	0.2	15,265	
S X C	0.2	2	N.S.

The mean influence of this source is found to be stronger for the Vocational plans of females (M = 2.80) than males (M = 2.70) and for students enrolled in an Academic Curriculum (M = 2.82) in contrast to those in General (M = 2.72) and Vocational (M = 2.72) curricula.

- Meet and Work with Sociable, Friendly People - represents an influence that is perceived as far more important to the Vocational plans of females (M = 2.64) than males (M = 2.38). The relatively much smaller (although significant) difference across the three curriculum groups indicates that General and Vocational students (M = 2.54 and 2.57, respectively) place more emphasis on this influence than do the Academic students (M = 2.46).

Source	Mean Square	df	F-ratio
Sex	227.4	1	584.7
Curriculum	11.0	2	28.3
Error	0.4	15,265	
S X C	2.0	2	5.2

A barely significant F-ratio for the sex by curriculum interaction is shown, in the graph below, to result from the fact that although Vocational students as a group tend to see this influence as more important than General or Academic students, there is a slight shift (cross-over) for the males; such that males of the General curriculum group find this influence to be slightly greater than do males in the Vocational curriculum.



Freedom to Make Own Decisions - is a factor in planning for vocations that yields no significant difference between mean values for students of the three curriculum groups. Each apparently finds this aspect of a career to be of equal importance. On the other hand, the difference between the sexes is significant and males

find this factor to have a considerably greater influence on their vocational plans (M = 2.38) than do the females (M = 2.28).

Source	Mean Square	df	F-ratio
Sex	31.9	1	73.8
Curriculum	0.7	2	N.S.
Error	0.4	15,265	
S X C	0.8	2	N.S.

Additional information from several items of the Student Questionnaire allow for more detailed analyses of aspects of vocational planning among two distinctly different subgroups that deserve separate consideration in regard to this aspect of their decision making. One is the college-going group and the other consists of those non-college-going students intending to go on to work or to vocational training programs associated with working (Apprenticeship or OJT) immediately after high school. (Separate sections of the questionnaire, as indicated in Appendix A, contain vocational plans items appropriate to each subgroup.)

(a) College-Going Subgroup - consists of those intending to go on to some form of college-level training, defined as taking University, four-year college, Junior College courses, or college level correspondence courses. For this subgroup it is possible to report on a fairly specific form of vocational planning as derived from: the intention of college-going students to pursue given fields of study while in college.

Twenty-one subject matter fields that constitute the response categories (as presented in SQ #69) range alphabetically from

Agriculture and Architecture to Social Science and Vocational-Technical Training. The findings worth highlighting from the resulting response distribution are: (1) four fields of study stand out significantly as the fields of first choice by these college-going students, Social Science (17%), Business (13%), Education (13%), and Health-related careers (11%). (2) Sex differences are exactly as would be hypothesized. Males select Business and Social Science primarily, while females predominate in choice of Education and Health fields. Comparisons between the three high school curriculum groups in this form of career planning makes little practical sense, since the sample composition for this college-going subgroup is so completely dominated by students in the Academic curriculum. (Needless to say, however, any contrasts made by Sex or Curriculum result in outstandingly significant chi-square values.)

(b) Subgroup Going to Work or Entering Vocational Training - represents a sample for which a unique form of information was provided regarding immediate post-high school vocational plans that allows for an examination of: The extent to which the vocational plans of students intending to go to work or enter vocational training are perceived by them as long-term or "stable." The analysis could be done by pooling responses to identical items appearing in several sections of the questionnaire (i.e., SQ Items #35, #39, and #79). Those items request a judgment regarding the extent to which the job a student "plans to get after high school" is the kind of work intended for "most of your life." The item response categories were grouped for dichotomous scoring (No/Yes).

It is evident that a relatively small proportion of Academically enrolled students would appear in this sample of non-college-going students (19%), so that the General and Vocational curriculum students, which make up the bulk of the sample (i.e., 40% and 41%, respectively), are of primary interest in any curriculum group comparisons.

With regard to comparisons by sex, in the 2 x 2 table below, it is found that males not going on to college express a somewhat significantly greater tendency to expect that they will remain in their planned vocational field over a lifetime (χ^2 = 12.1 for 1 df; $p < .01$).

		Sex	
		Male	Female
Work Plans for Lifetime?	No	24.8%	27.2%
	Yes	25.1%	23.0%

In contrasting responses of General and Vocational students not going on to college it is apparent that those in the Vocational curriculum are far more likely to see their planned occupational selection as a stable (lifetime) choice than are the General students (χ^2 = 62.0 for 1 df; $p < .01$).

		Curriculum	
		General	Vocational
Work Plans for Lifetime?	No	20.9%	17.4%
	Yes	18.6%	23.4%

Another point of interest regarding "stability" of career plans involves the role of that construct in a broader context of vocational choices. One approach to dealing with the issue, using available questionnaire data, is to determine: the relationship of career plans "stability" to the status level of vocational plans (LVP) for the non-college-going students. The correlations between stability of choice and Level of Vocational Plans are as follows for General and Vocational curriculum groups by sex:

Sex and Curriculum Group	Correlation of "Stability" with Level of Vocational Plans
Males (General)	-.10
Males (Vocational)	-.02
Females (General)	.27*
Females (Vocational)	-.05

There is no clear indication of "lifetime" commitment to a specific occupational intent having any particular bearing on the status level of a student's intended occupation. Only among females enrolled in the General curriculum is there an indication (at a meaningful level of r) that those whose occupational choice is more long-term, or stable, tend to be the ones whose plans involve higher status occupations.

Another approach to examining the role of the stability variable is to look at its possible influence on some form of specific decision, wherein tangible action has been taken by the student to influence his vocational future. One important such

* r significant at well beyond the .01 level.

action-decision for which an opportunity exists in the high school setting is for the student to take part in one or more of the available special education programs (such as Work-Study, Cooperative education, etc., as indicated in SQ item #6). The specific point to be considered is: The extent to which stability of vocational plans is related to participation in a special education program on the part of non-college-going students. The resulting relationships are as follows:

Special Education Program	Male		Female	
	General	Vocational	General	Vocational
Cooperative Voc. Ed.	.18*	.05	.19*	-.02
Work Study	.14*	-.08	.10	-.09
Neighborhood Youth Corps	.05	.12	-.03	-.03
Talent Search	--[1]	.00	.03	--[1]
Upward Bound	--[1]	.03	--[1]	.06

The stability, or permanence, that a student assigns to his vocational intention is by no means uniformly related to his degree of participation in a special education program. Correlations of very minor (but significant) magnitude indicate, primarily, that those males or females enrolled in a General curriculum and expressing greater stability in vocational intent, are the ones who are more likely to have taken part in a cooperative Vocational Education program.

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[1] Insufficient N's to compute meaningful r.

* r significant at .01 level.

Relationships Between Student Characteristics and Level of Vocational Plans (LVP)

Among the more informative ways of understanding the role of student vocational plans and their possible origins is not only through the student's own views regarding his intentions (as analyzed above) but in the relationships of those plans to a variety of behavioral and demographic characteristics dealing with home, family, achievement level, educational experience, and the school environment.

For that purpose, a listing of the zero-order r's between a number of student background and personal characteristics and the level of the student's vocational plans (LVP) are presented in Table 7 for males and females separately.

It should be noted that the 16 independent variables shown here (and in subsequent analyses with plans and aspirations measures as dependent variables) represent the ones for which there were significant r's with levels of interpretable as well as practical magnitude (i.e., at least some r's in the .20's or better). Specifically, there were no r's of any reasonable or interpretable magnitude found for variables of: Self-Esteem, the Influence of Clergymen or Friends (as perceived by the student), Teacher's Educational Level, the Number of Advanced Placement Courses (available in the school), or Number of Special Learning Stations (available in the school).

Table 7

Correlations of Level of Vocational Plans (LVP) with Student Background and Personal Characteristics

	Student Characteristics	LVP Males (N=400)	LVP Females (N=500)
1.	Family Income	.25	.21
2.	Father's Education	.20	.20
3.	Mother's Education	.10	.20
4.	Father's Occupational Level	.28	.19
5.	Class Rank	.36	.34
6.	Vocabulary	.33	.25
7.	Math	.37	.34
8.	Father's Educ. Wish	.49	.38
9.	Mother's Educ. Wish	.48	.38
10.	School SES (% Fath. Prof.)	.17	N.S.*
11.	School Influence (% Go to College)	.20	.19
12.	School Pers. Influence (Tchrs. Counslrs)	.26	.22
13.	# Avail. Voc. Educ. Courses	.22	N.S.*
14.	Educational Aspirations (LEA)	.48	.42
15.	Educational Plans (LEP)	.53	.43
16.	Vocational Aspirations (LVA)	.56	.39

* Non-Significant ($p > .01$): All other r's significant at .01 level in this and subsequent correlation tables.

The overall pattern of relationships presented indicates that: (a) family characteristics reflecting socioeconomic status possess very modest but significant levels of relationship to LVP, with r's primarily in the .20's; (b) school influences on future plans--both "direct" (perceived teacher and counselor influence) and "indirect" (percent of students in the school whose fathers are professionals, percent of students from the school who go on to college, number of available vocational education courses)--show approximately similar levels of relationship. These are primarily in the .20's for males, but are somewhat less consistent in pattern or number of significant r's for females; (c) demonstrated achievement in the form of academic grades (class rank), mathematics and vocabulary test scores show moderate levels of correlation for both sexes (r's in the .30's). These constitute the best of the external measures (i.e., independent of the student's self-report) as concurrent correlates of student vocational plans; (d) Parental Educational Desires tend to show consistently substantial r's (in the high .30's and .40's), but these should be interpreted only in light of their being based on the student's report of parental wishes and not the direct expression of such wishes by parents; and (e) Levels of the student's Educational Plans (LEP) and his Level of Aspirations for his Vocational and Educational future (LVA, LEA) yield (as they sensibly should) the relationships of highest magnitude, with those r's found to be in the .40's and .50's--i.e., the student's plans and aspirations are fairly consonant with each other.

Some of the sex differences found in the above results are of special interest. First, it can be noted that the levels of the zero-order

correlations are almost invariably higher for males than for females. The only exception--and strikingly so--is found for Mother's Education which is significantly higher for female Level of Vocational Plans than for male. This same result will be seen to hold consistently for the other dependent variables of plans and aspirations (LVA, LEA, LVP) and provides strong evidence for the greater potential influence of mother's education on their daughters' plans and aspirations than on those of their sons. The significantly higher correlation of vocational plans with like-sex parental education for females is not known to have been pointed out explicitly in any prior literature. This is largely because the variables of Mother's education is either unused as an SES measure (i.e., Father's education is preferred) or it is incorporated in a composite SES measure of the sort applied by Sewell, et al. (1970).

Another sex difference worth noting and, perhaps, reasonably explainable, is the much higher r for males between LVP and Number of Available Vocational Education Courses in the school (r = .22 for males and .06 for females). In most schools boys not only tend to enroll in entirely different types of vocational courses with the likelihood of a wider range to choose from, but may well have entered (or been placed in) such a curriculum for entirely different reasons than is the case for females. Given those conditions, a variety of implications can be invoked for explaining the differential role of available vocational education courses in the vocational plans of the sexes and (as will be seen in the subsequent analyses) for its differential role in their vocational aspirations.

One further sex difference found is that males tend to view what they plan to do vocationally (LVP) and what they would aspire to do (LVA)

in a fairly similar way (r = .56), whereas, females show a markedly lesser degree of relationship between the two variables (r = .39), indicating a poorer match between their career plans and their preferences (i.e., a greater awareness of potential social constraints on occupational possibilities?).[1]

C. Educational Plans

Information pertaining to this form of student intent deals with educational choices in terms of both curriculum decisions arrived at in high school and future educational objectives that focus on the near-term or first post-high school year. A broad descriptive question applicable to this area of student decisions would be: What is the level of future educational attainment that students plan for at the time they are completing high school?

For the total sample, the mean educational level sought (Level of Educational Plans or LEP) lies at 3.83 on a six-point response scale (SQ Item #29), or a choice just below that of a Junior College education. ANOVA results for the scale responses are as shown in the following summary:

Source	Mean Square	df	F-ratio
Sex	152.0	1	122.0
Curriculum	2547.1	2	2050.6
Error	1.2	9,618	
S X C	1.6	2	N.S.

[1] A greater restriction in range on the Vocational Status scale for female LVP (see Table 5) may also help to explain this result.

There are significantly higher levels of educational intent shown for the males (M = 3.95) than for the females (M = 3.71). As would be expected, there are extreme (and highly significant) mean differences found between curriculum groups, the rank ordering of which are also as might be expected on the basis of educational (curriculum) experience. Thus, academically enrolled students display the highest level of educational plans, by far, with a mean of 4.80 (nearly four-year college LEP); the General students a mean of 3.61 (about midway between the level of "Voc.-Tech., Business or Trade School" and Junior College); and the Vocational students a mean of 3.08, which is precisely at the "Voc.-Tech., Business or Trade School" response level. No significant Sex by Curriculum interaction is found for the LEP variable.

At the next level of inquiry, it seems appropriate to ask: Who exercises the major influence on high school students' educational plans? One approach to the answer can be in terms of the student's opinion regarding sources of such influence on the choice of his present high school program. It seems reasonable to assume that those who exercise a primary role in present curriculum choices would be the ones having the same relative influence on future educational plans.

The item available for analysis (SQ Item #3) duplicates, in large part, the response categories previously analyzed for perceived sources of influence on General Plans and, as will be seen here, provides closely comparable results. Mean levels for the 11 response categories appear in Table 8.

These means indicate that the two entirely dominant sources of educational plans influence are the student himself ("Yourself") and

Table 8

Perceived Sources of Influence

on Educational Plans

(Overall Means; N = 13,889)

	Response Category	Mean
1.	Your Parents	2.10
2.	Relative (Other than Parents)	1.33
3.	Guidance Counselor	1.75
4.	Teacher	1.51
5.	Principal or Assistant Principal	1.19
6.	Clergyman	1.13
7.	Other Adult	1.34
8.	Friends	1.78
9.	Yourself	2.87
10.	No choice (only program avail.)	1.20
11.	No choice (assigned)	1.19

his parents. Overall MANOVA indicated that the contribution to the highly significant mean differences between response categories is proportionally much greater on the basis of student Curriculum group membership (trace = 0.44) than it is for Sex (trace = 0.13). The role of the two plans influences, perceived as dominant by the student, yields the following results in univariate (ANOVA) analyses.

· Influence of Yourself - produces significant mean differences by Sex (M = 2.90 for females and 2.84 for males) and between the three curriculum groups (M = 2.84 for General students, 2.91 for Academic, and 2.86 for those in a Vocational curriculum), with no significant Sex by Curriculum interaction.

Source	Mean Square	df	F-ratio
Sex	9.1	1	64.3
Curriculum	6.1	2	43.1
Error	0.1	13,885	
S X C	0.1	2	N.S.

As found previously in the analyses for General Plans, it is the females and the Academic students who are more likely to see themselves as the primary source of influence in reaching their educational decisions.

· Influence of Parents - presents a similar ANOVA pattern to the one for Self-Influence, in that the mean for females (M = 2.15) is found to be significantly higher than for males (M = 2.05) and the Academic students view parental influence as significantly more important (M = 2.14) than either the General (M = 2.08) or Vocational (M = 2.08) curriculum students. Similarly, there is no significant sex by curriculum interaction found for this response category.

Source	Mean Square	df	F-ratio
Sex	39.5	1	85.1
Curriculum	6.7	2	14.4
Error	0.5	13,885	
S X C	0.1	2	N.S.

Information of a different sort regarding the educational planning process that has been of interest in prior research is the variable of "Time of decision" for college-going--i.e., how early that educational decision is arrived at by the student. The issue is often phased in terms of whether students known to plan for higher levels of educational achievement (i.e., Academic students) make their plans at a different point in their development than those known to plan for less education (i.e., General and Vocational students). From an analysis of time-of-decision as dependent variable with Sex and Curriculum as independent variables, the answer is unequivocal.

Source	Mean Square	df	F-ratio
Sex	14.9	1	6.8
Curriculum	3303.5	2	1504.3
Error	2.2	16,026	
S X C	2.1	2	N.S.

Those students with the highest levels of educational plans (i.e., the Academic group) make the decision about whether or not to go to college much earlier than those of the other two curriculum subgroups. The Academic student tends to make this decision somewhere just prior to the tenth grade (M = 1.94 on the five-point response scale of SQ

Item #27), while the General student decides anywhere from 11th grade on (M = 3.14), and the Vocational student (who has been shown to plan for the least post-high school formal education) makes the decision of whether or not to go to college significantly later than either group--i.e., at some time near the senior year of high school (M = 3.34). The F-ratio for sex with regard to time of college-going decision is barely significant at the .01 level and indicates a slight tendency for females (M = 2.78) to make an earlier decision than males (M = 2.84).

In most analyses of students' post-secondary school educational planning, the tendency has been to focus on the plans of those whose primary intent is to go on to some type of full-time formal education. Educational plans of those who express no such intent are, unfortunately, often ignored, as if further education does not basically concern them (i.e., those planning for full-time employment, for OJT and apprenticeships, or, in the case of women, for the role of full-time homemakers). The opportunity is presented, with the present data (SQ Items #36, #41, and #53), to examine the level of what are essentially the part-time educational plans for those students intending to go to work full time, enter apprenticeship-OJT programs, or become homemakers. Using a three-point response scale of Level of Educational Plans from "No Plans" at the low end; "Voc.-Tech., Trade, Business, or Correspondence School part-time" midway on the scale, and "Part-time College or University level courses" at the higher end, the ANOVA summary that results is shown below:

Source	Mean Square	df	F-ratio
Sex (S)	5.0	1	13.1
Curriculum (C)	12.7	2	33.6
Non-Formal Educ. Groups (N)	8.9	2	23.5
Error	0.4	4,794	
S X C	0.5	2	N.S.
S X N	0.3	2	N.S.
C X N	0.6	4	N.S.
S X C X N	1.1	4	N.S.

For the three categories of students not going on full time to formal post-secondary education, there is a significant difference in their level of educational plans (F-ratio = 23.5). Those with the highest level of part-time educational plans are the ones entering full-time apprenticeship-OJT positions (M = 1.55), while those going on to full-time employment or as homemakers have significantly lower levels of part-time educational plans (M = 1.35 and 1.36, respectively). Males are, in general, found to have significantly higher level part-time educational plans (M = 1.47) than females (M = 1.37).

On the basis of current high school curriculum membership (all three non-full-time formal education groups combined), there is a highly significant difference in level of educational plans (F-ratio = 33.6). Somewhat unexpectedly perhaps, it is the students enrolled in the General curriculum whose level of educational plans (M = 1.56) are significantly higher than those of either the Academic (M = 1.44) or Vocational (M = 1.26) curriculum groups. This is the only career or educational

decision situation in which such a reversal of level is found to occur when comparing General and Academic students. The suggested reason is that those Academic students who plan to take the unconventional route of not seeking further full-time formal education, are those who have also modified their part-time educational plans downward to a relatively extreme degree (i.e., they appear to represent a different "breed" than the conventional college-going Academic student).

Relationships Between Student Characteristics and Level of Educational Plans (LEP)

Correlations between background and personal characteristics of students and Level of Educational Plans (LEP) are shown in Table 9.

Although the overall pattern of results for these significant r's is similar to that found for vocational plans, there are several distinct differences. For one, the consistently higher levels of relationship for males in comparison to females no longer holds, most notably for the first two key SES variables of Family Income and Father's Education. For another, the variables involving school characteristics (Variables #10 - 13) result in markedly higher correlations with LEP than was found with LVP. (Number of Vocational courses is seen to reach a significant level for the females for the first time, although still significantly lower than for males.) It seems understandable that the level of educational plans by students should generally be more highly related to aspects of the present school environment than is the longer-term planning process required of the student in responding to the LVP measure. Correlations found for two of the variables that could be said to define school "social class"

Table 9

Correlations of Level of Educational Plans (LEP) with Student Background and Personal Characteristics

	Student Characteristics	LEP Males (N≈7500)	LEP Females (N≈8000)
1.	Family Income	.26	.30
2.	Father's Education	.35	.38
3.	Mother's Education	.26	.32
4.	Father's Occupation Level	.32	.30
5.	Class Rank	.40	.38
6.	Vocabulary	.35	.31
7.	Math	.44	.42
8.	Father's Educ. Expect.	.73	.68
9.	Mother's Educ. Expect.	.72	.68
10.	School SES (% Fath. Prof.)	.26	.21
11.	School Influence (% Go to College)	.35	.21
12.	School Pers. Influence (Tchrs. Courses)	.30	.27
13.	# Avail. Voc. Educ. Courses	.35	.21
14.	Vocational Aspirations (LVA)	.46	.51
15.	Vocational Plans (LVP)	.53	.43
16.	Educational Aspirations (LEA)	.66	.70

(i.e., School SES and School Influence) are commensurate with previous findings for zero-order relationships of similar variables and college plans of students (Bain & Anderson, 1974).

Further differences between the LEP, LVP correlational patterns are notable in some of the highest of the correlations found, i.e., those for the dependent variables of Parental Educational Wishes (as viewed by the Student). Relationships are understandably much stronger between parental educational wishes and student educational plans than between those parental wishes and the student's vocational plans. It should not be considered unusual that students plan for educational attainment at a level that is very similar to what they believe their parents want for them.

Overview of Findings for Student Plans

This overview of findings, derived from the descriptive analyses of student plans, is intended to highlight major features of substantive interest. All of the statements presented in this overview are based on statistically significant findings ($p < .01$) from the above results.

A. General Plans

- Most senior high school students (male or female) planned either to attend a four-year college or go to work full time during the year following high school. As would be expected, the students enrolled in an Academic curriculum are more likely to choose college-going, whereas those in General or Vocational curricula are more likely to choose full-time work as their predominant planned activity.

•• Primary sources of influence on post-high school plans are perceived by students as originating within themselves, from their parents, and from their friends (in that order of importance). In sex and curriculum comparisons, females generally see these sources as more influential than males. Academic students claim to be more influenced by their own decisions and by parents than do General and Vocational curriculum students whereas, the latter claim to be more influenced by friends.

•• Where school personnel (teachers, counselors) do provide advice to students regarding general future plans, it is predominantly in the form of suggestions for additional formal education. That advice appears highly appropriate to student curriculum background, since academic students are prodded to a far greater extent to go to college than those of the other curricula, while vocational students receive the greatest urging to go on to formal technical skills training.

•• Students in the various curriculum groups see the general plans of their friends as tending to match their own dominant, post-high school intentions.

B. Vocational Plans

•• The majority of students plan to enter occupations at the upper end of the social status continuum. It is the Technical-Managerial and Professional categories that predominate in their Vocational intent. The distribution is largely commensurate with curriculum membership, in that the Academic students comprise the largest

proportion of those planning to enter those higher level occupations whereas Vocational students show a comparatively larger proportion planning to enter the lower-status skills and crafts occupations.

•• The dominant characteristics of occupations that serve to influence student vocational choice are the importance and interest of the work, having an opportunity to work with sociable, friendly people and the freedom to make their own decisions in a job. Academic students place more emphasis on the importance of interest of work and decision-making freedom, in contrast to Vocational and General students who place greater stress on having friendly and sociable co-workers.

•• Dominant fields of study chosen by students planning to pursue some form of college-level education follow predictable, sex-dependent choices--i.e., the males plan to enter Social Science and Business primarily, while females plan for Education and Health-related careers.

•• Among the subsample of students who do not plan for post-secondary formal education (primarily in Vocational and General curricula), the certainty ("stability") of their vocational plans is perceived as greater by females and by students enrolled in a Vocational curriculum. No particular relationships to the degree of plans stability exists as a function of the students having participated in special education programs--with the exception of rather weak positive correlations found for the General curriculum students who participated in Cooperative Vocational Education programs.

•• A number of student personal and background characteristics yield significant zero-order r's with Level of Vocational Plans (LVP). Modest relationships (r's ≈ .20's) exist for Home-SES variables and School Characteristics variables, with more substantial correlations (r ≈ .30's) for Academic achievement and cognitive abilities and the highest r's generally found for parental educational wishes as reported by the student (r's ≈ .40's). These correlations are generally higher for males than for females.

C. Educational Plans

•• Student plans for their educational future vary considerably by sex and curriculum enrollment. Males plan for more education than females and--as is logical--Academic curriculum students plan for higher levels of education than General students who, in turn, express intentions for higher level educational attainment than Vocational students.

•• Sources of influence, perceived by students as having major effects on educational plans, consist of themselves and their parents. Females and Academic students assign greater importance to both sources of influence than do males or those students enrolled in the other two curricula.

•• Academic students make their decision about whether or not to go on to college much earlier than students in the General or Vocational curricula.

•• Plans for part-time education, on the part of students who are not going on to full-time, post-secondary formal schooling, indicate

that the highest level of plans exist for those who intend to enter full-time apprenticeship-OJT programs, as contrasted with those going on to regular full-time jobs or homemaking.

•• The overall pattern of correlations between student personal and background characteristics and Level of Educational Plans (LEP) is generally similar to the findings obtained for Vocational Plans (LVP). The differences that occur are primarily in the comparative magnitudes of the r's, which are uniformly higher for both males and females when LEP is used as the dependent variable. Thus, with LEP, Home-SES measures result in r's in the .30's; academic and cognitive achievements yield r's in the .30's to .40's, while for school characteristics the resulting r's are consistently in the .20's and .30's.

Student Aspirations

A. General Aspirations

The dependent variables of interest for this aspect of aspirations deal with post-secondary school preferences of students for broadly defined areas of endeavor that range over work, school, travel, military service, marriage, etc. Available information for this purpose from the Student Questionnaire deals with both specific short-term desired activities, immediately following high school, and broader long-term "lifetime" priorities that students feel are important to the fulfilling of future hopes.

Of most direct relevance to the identification of general aspirations would be the question: What are the dominant activities aspired to by students during the first year following high school? Response distributions for the pertinent questionnaire item that addresses the question (SQ Item #8) are shown in Table 10 for the ten response categories by Sex, Curriculum, and Total Sample. The two dominant choices (Work Full Time, 22.4%; Attend College, 30.7%) are, as expected, exactly those found for the previous analysis of the same response categories for General Plans (Table 2). There is one outstanding difference for the distributions that is interesting and has readily explainable implications for desired post-high school activities.

That difference is the marked and highly significant ($p < .01$) shift to the category of "Other" activities encompassing travel, taking a break, or having no particular plans. The buildup of frequencies in that category for student general aspirations, when contrasted with

Table 10

Distribution of Responses for General Aspirations

by Total Group, Sex and Curriculum Enrollment

(N = 15,807)

Activity Aspired to (1 year Post High School)	Total	Sex		Curriculum		
		M	F	General	Academic	Vocational
1. Work Full Time	22.4%	11.6%	10.8%	9.1%	3.5%	9.8%
2. Enter Apprent. or OJT	3.5	2.6	0.9	1.6	0.8	1.1
3. Military Service	3.0	2.6	0.4	1.1	1.0	0.9
4. Full-time Homemaker	3.3	0.0	3.3	1.3	0.8	1.2
5. Take Voc.or Tech. Courses	7.8	3.1	4.7	2.9	1.9	3.0
6. Academic Courses at Junior College	6.8	3.4	3.4	2.2	3.7	0.9
7. Tech.-Voc. Courses at Junior College	4.3	2.1	2.1	1.5	1.6	1.2
8. Attend 4-year College or University	30.7	15.7	15.0	5.2	23.6	1.9
9. Work Part Time	2.8	1.1	1.7	1.3	0.6	0.9
10. Other (Travel, Break, No Plans)	15.4	7.5	7.9	4.9	7.4	3.1

general plans, is almost entirely matched by declines in the two dominant categories. Given the hypothetical choice of indulging their preferences, a significant number of students would simply not carry out their expressed plans, with regard to working or going on to school, but would choose the more "desirable" leisure pursuits.

All other aspects of the General Aspirations distribution pattern yield similar analytical results to those found for General Plans--i.e., a highly significant overall difference in choices by Sex (χ^2 = 955, again largely attributable to inevitable sex differences in the "military," "homemaker" and "apprenticeship-OJT" categories), as well as significant differences over the three curriculum subgroups, showing that Academic students overwhelmingly desire to go to college, while General and Vocational students indicate that going to work is their dominant aspiration.

Beyond these short-term aspirations for specific activities, students express longer-range desires that they would hope to fulfill over the course of their adult lives. The question amenable to analysis from the available information is: What are the most important long-term or lifetime aspirations of high school students?

Mean values, indicating the degree of importance assigned to ten categories of general lifetime aspirations (SQ Item #20) are shown, for the total student sample, in Table 11. Overall contributions of Sex and Curriculum variables, to the highly significant difference between those ten means, indicate a comparative degree of similarity (trace = 0.95 for Sex; 0.63 for Curriculum).

Table 11

General Aspirations Considered
Most Important "In Your Life"
(N = 15,632)

	Category	Mean
1.	Success in Line of Work	2.84
2.	Good Marriage; Happy Family Life	2.77
3.	Having Lots of Money	1.98
4.	Having Strong Friendships	2.75
5.	Able to Find Steady Work	2.78
6.	Leader in My Community	1.69
7.	Better Opportunities for My Children	2.66
8.	Live Close to Parents and Relatives	1.60
9.	Get Away from This Area of Country	1.58
10.	Correct Social & Econ. Inequalities	2.01

The several dominant lifetime endeavors underscored in the Table are seen, in order of importance, to be: success in one's line of work, the ability to find steady work, and achievement of a good marriage with a happy family life. In short, the student values vocational and family adjustments most in his lifelong aspirations. The comparative role of each of these dominant hopes for the sexes and curriculum subgroups are best understood in the ANOVA findings.

- Success in Line of Work

Source	Mean Square	df	F-ratio
Sex	2.5	1	15.4
Curriculum	0.7	2	N.S.
Error	1.2	15,628	
S X C	0.1	2	N.S.

From these results, it can be said that students are in general agreement regarding the high priority that they place on this lifetime desire. Thus, there are no significant differences between the mean values of this category for students of the different curriculum groups and--although the mean difference between males and females is statistically significant ($p < .01$)--for practical purposes, that difference in scale values can be interpreted as rather trivial ($M = 2.85$ for males and 2.83 for females).

- Able to Find Steady Work--as a second ranked lifetime aspiration is seen in the ANOVA summary to result in highly significant differences between the sexes and the curriculum groups as to their judgment of its relative importance.

Source	Mean Square	df	F-ratio
Sex	25.3	1	111.7
Curriculum	25.9	2	114.5
Error	0.2	15,628	
S X C	1.3	2	5.9

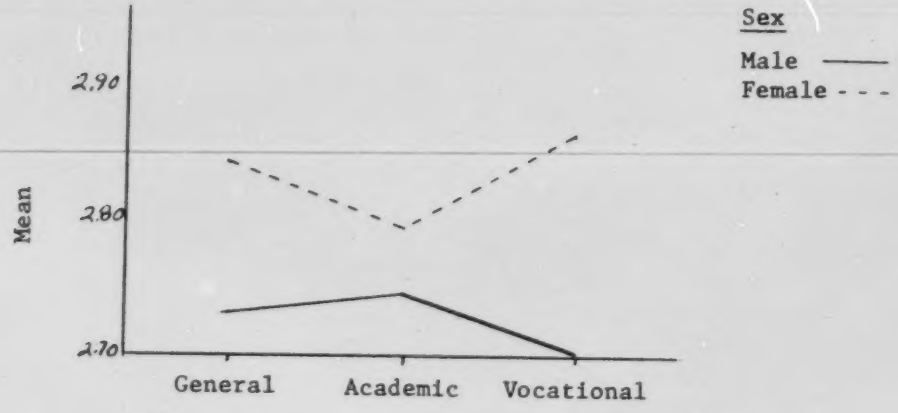
This desire occupies a much stronger position in the aspirational hierarchy of males (M = 2.82) than it does for females (M = 2.74), which seems logical on the basis of the greater social responsibility imposed on males as primary wage earners. It is students of the Vocational curriculum group who place significantly greater importance on this aspiration (M = 2.84) than those enrolled in either the General (M = 2.79) or Academic curricula (M = 2.71). Again, the relative priority assigned seems to fit the social expectations appropriate to the group; i.e., Vocational students being the ones who face the stronger (and more immediate) pressures to obtain employment.

The barely significant and very minor interaction effect found is worth only passing comment, as having resulted from somewhat closer mean values for males and females of the Vocational group (i.e., they show better agreement) than is found with the other two curriculum groups.

Good Marriage and Happy Family - follows very closely behind "Steady Work" in its mean value, but seems to play a different role in the priority assigned by the sexes and the curriculum groups.

Source	Mean Square	df	F-ratio
Sex	35.9	1	134.5
Curriculum	0.5	2	N.S.
Error	0.3	15,628	
S X C	3.8	2	14.3

The category can be seen to produce a very significant mean difference between the sexes, with the nature of that difference entirely predictable from social role expectations. Thus, it is the females who place greater stress on this future wish (M = 2.82) than males (M = 2.72). However, there is no significant difference found in the priority assigned this lifetime aspiration for those of different curriculum groups. The significant interaction effect is of particular interest as a qualifier of those general findings and is readily interpretable from the following graph:



The clear overall divergence for the sexes, in the importance placed on marriage and family, is seen to be largely a function of curriculum group membership. This divergence is greatest among General and Vocational curriculum students, with girls in the latter group placing much more emphasis on that aspiration than boys. Conversely, girls in an Academic curriculum tend to place comparatively less emphasis on marriage and family and do not show nearly as great a disparity in contrast to Academic males.

B. Vocational Aspirations

This category represents preferences for occupational or career areas that students would like to enter. The information to be utilized in the analyses deals with occupational hopes or desires for the foreseeable future, the relative priorities that students attach to various features of desired occupations (which can serve as clues to the understanding of vocational desires), and the various background characteristics (personal, family, and school) that might bear on the career wishes expressed.

The first question for consideration is: What is the preferential ranking of the various occupational groupings, or career categories, to which students aspire? The percent choosing each of the various occupational categories (from SQ Item #25) are presented by total group, sex, and curriculum in Table 12.

Levels of chi-squares for any of those distributions are, obviously, found to reach levels of extreme significance (in fact, more so than any other frequency distribution comparison made in this study). The category of unmistakable dominance in student preference, is that of Professional occupations (44.7%) with a major contribution to that choice coming from students enrolled in an Academic curriculum. This disparity in comparison to other choices for the Academic group is so complete, that it is hard to consider any other choice even a poor second (e.g., the Technical category at 3.3%). Of equal interest is the relative dominance that the Professional category continues to hold for the General curriculum

Table 12

Distribution of Post-High School Occupational Aspirations by Skill Area

(N = 12,273)

Vocational Area Aspired to	Total	Sex		Curriculum		
		M	F	General	Academic	Vocational
1. Clerical	14.7%	1.0%	13.7%	4.0%	2.8%	7.9%
2. Craftsman	7.7	7.4	0.3	2.9	1.6	3.2
3. Farmer; Farm Manager	1.6	1.3	0.2	0.6	0.5	0.4
4. Homemaker or Housewife	3.0	0.0	3.0	1.3	0.9	0.8
5. Laborer	2.5	2.4	0.1	1.0	0.7	0.8
6. Manager-Administrator	3.1	2.4	0.7	0.9	1.7	0.5
7. Military	2.4	2.0	0.4	0.9	1.0	0.5
8. Operative (e.g., assembler, welder)	2.3	1.9	0.4	0.8	0.6	0.9
9. Professional	44.7	19.8	24.9	9.0	32.7	3.0
10. Proprietor or Owner	1.8	1.6	0.2	0.8	0.7	0.3
11. Protective Service	2.2	2.0	0.2	1.0	0.8	0.4
12. Sales	3.0	1.3	1.7	1.0	1.2	0.8
13. Service (General)	4.2	0.7	3.5	1.7	1.2	1.3
14. Technical	6.7	4.2	2.5	2.0	3.3	1.4

group (9.0%), whose training would not customarily be aimed at occupations subsumed under that category. For the second and third ranked occupational preferences of the General curriculum students, however, (i.e., Clerical and Craftsman) the choices begin to reflect the educational background of these students more appropriately.

Dominant occupational preferences of the Vocational curriculum group show relative rankings more commensurate with their training and previously indicated vocational plans. This is reflected in their primary preferences being assigned to Clerical (7.9%) and Craftsman (3.2%) categories. But here, also, the Professional category ranks relatively high, falling in close behind Craftsman at 3%. Although there might be little concern with level of "realism" when students are free to express hopes, or desires, for an occupation (i.e., there is no necessary implication in these aspirations of intent to enter the particular field desired), the unusually pervasive role of the Professional category for all curriculum groups might raise questions regarding the diverse range of skill areas and educational backgrounds contained in the description of that category (e.g., from Artist and Actor to Physician and Scientist). If its definition represents too much of a "catch-all," it can only serve to distort, unnecessarily, comparative response frequencies in other occupational categories.

Knowing about specific occupations, to which students aspire at a given point within their development, has been felt to represent a somewhat unstable form of information (Schmidt & Rothney, 1955) easily changed by a student's new experiences or knowledge. More stable data, for the prediction and understanding of later vocational desires or actual choices,

could stem from knowledge of specific values that underlie those aspirations (Super, 1957). Available information for exploring those values can be found in responses to the question of: What is the importance of various characteristics of preferred jobs that make them desirable choices for students? Response means over ten categories (found in SQ Item #24) are shown in Table 13.

Table 13

Influences on Job and Career Aspirations

(N = 15,417)

	Response Category	Mean
1.	Making a Lot of Money	2.11
2.	Opportunity to Be Creative	2.24
3.	Helpful and Socially Useful	2.45
4.	Avoid High Pressure Job	2.10
5.	Live and Work in World of Ideas	2.19
6.	Freedom from Supervision	1.95
7.	Moderate-Steady Progress, No Extreme Success or Failure	2.21
8.	Chance to Be a Leader	1.73
9.	Work with People Rather Than Things	2.33
10.	Position Looked up to by Others	2.01

The three categories with means underscored, stand significantly apart from the remaining response means as the dominant influences

perceived by students. For the overall significant difference between response means, the major contribution derives predominantly from Sex (trace = 1.92) which is at least four times greater than differences attributable to Curriculum (trace = 0.45). Those differences in contribution are reflected directly in the univariate analyses of the three dominant influences on career aspirations.

· Helpful and Socially Useful - results in a distinctly greater difference in comparison of means by Sex than by Curriculum. Female students view this influence as considerably more important (M = 2.59) than males (M = 2.31), while Academic students place the highest value on this aspect of a career (M = 2.52) in contrast to either the General (M = 2.44) or Vocational students (M = 2.39). The overall findings stand without qualification, based on lack of any significant Sex by Curriculum interaction.

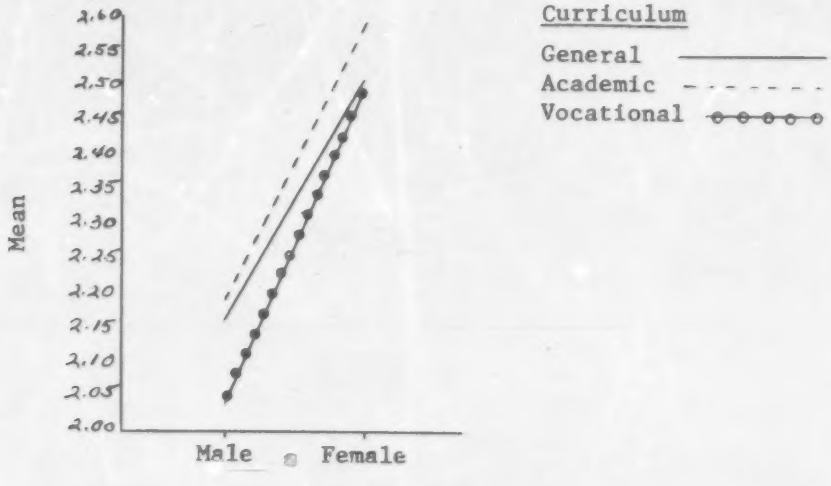
Source	Mean Square	df	F-ratio
Sex	286.1	1	801.8
Curriculum	20.0	2	56.1
Error	0.4	15,413	
S X C	1.3	2	N.S.

· Work with People Rather Than Things - is a career influence that produces enormously significant sex differences, indicating its special importance to the females (M = 2.53) against the value placed on it by males (M = 2.13). The result represents the most significant single occurrence of any mean difference between sexes reported in this study.

Source	Mean Square	df	F-ratio
Sex	621.9	1	1306.6
Curriculum	15.1	2	31.6
Error	0.5	15,413	
S X C	3.8	2	8.0

Again, as for the first ranked influence ("Helpful and Useful"), it is the Academic group who rate this aspect of a career significantly more important (M = 2.39) than students in the General curriculum (M = 2.33) or those in the Vocational curriculum who, in turn, rate it as least important (M = 2.27).

The significant S X C interaction, as graphed below, is seen to be the result of a somewhat more extreme difference over curriculum groups attributable to males of the Vocational curriculum. That is, they rank this job attribute as significantly lower than other males, whereas, females tend to be more like one another in the strong emphasis placed on a desire to work with people, whatever their curriculum group membership.



· Opportunity to Be Original and Creative - somewhat unexpectedly, does not differentiate significantly between male and female student responses ($p > .01$), but is significant only between curriculum groups. Academic students place the highest stress on that aspect of a career ($M = 2.29$), General students see it as lower in importance ($M = 2.24$), and the Vocational group assign it the least importance ($M = 2.18$). No significant Sex by Curriculum interaction is found that can provide any qualification to the overall statement of findings.

Source	Mean Square	df	F-ratio
Sex	2.8	1	N.S.
Curriculum	14.5	2	31.9
Error	0.4	15,413	
S X C	0.6	2	N.S.

This consistently greater stress that Academic students seem to place on the social and creative aspects of careers, in contrast to the Vocational students (especially Vocational males), can be viewed as a logical result that follows from the characteristics of the student who makes those curriculum choices and the steps in career preparation that each curriculum entails. Thus, the more technical skills and crafts that make up a major portion of Vocational curricula for males are not likely to attract as many students with a social-creative job orientation in the first place. Nor is such a job orientation likely to be inculcated in high school

Vocational curricula--if not viewed as an actual disadvantage for many of the types of jobs envisioned and sought by Vocational students.[1]

Relationships Between Student Characteristics and Level of Vocational Aspirations (LVA)

The zero-order r's for LVA and the student background and personal characteristics are found to be highly similar to the LVP correlates previously discussed, particularly for the males (a result that follows, logically, from the higher LVA-LVP correlation for males of .56, in contrast to the r of .39 for females). These are essentially similar patterns of relationships to those found for each of the other plans or aspirations measures in terms of the three achievement scores, the four school characteristics, and the four home-SES measures. Again, as for LVP, the vocational aspiration level is much more highly related to the "Mother's Educational Level" for females than for males, whereas "Father's Educational Level" has a similarly significant relationship for both sexes. Also recurring is the striking sex contrast for the school variable of "Number of Vocational Education Courses" indicating a negligible relationship for females (r = .08), but a modest one for males (r = .25).

Outside of the fact that the correlations are no longer found to be uniformly higher for males than females, the only other marked sex

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[1] Some indirect support for such an interpretation is found in the Vocational students' assignment of highest rank to the response category ranked sixth, overall, by students--that of "Making a Lot of Money." This represents the most extreme deviation for any curriculum or sex subgroup from overall student rankings of dominant responses.

Table 14

Correlations of Level of Vocational Aspiration (LVA) with Student Background and Personal Characteristics

	Student Characteristics	LVA Males (N≈7500)	LVA Females (N≈8000)
1.	Family Income	.20	.24
2.	Father's Education	.19	.26
3.	Mother's Education	.08	.27
4.	Father's Occupational Level	.27	.20
5.	Class Rank	.28	.26
6.	Vocabulary	.30	.25
7.	Math	.33	.34
8.	Father's Educ. Wish	.45	.56
9.	Mother's Educ. Wish	.43	.52
10.	School SES (% Fath. Prof.)	.15	.08
11.	School Influence (% go to College)	.21	.17
12.	School Pers. Influence (Tchrs. Courses)	.23	.24
13.	# Avail. Voc. Educ. Courses	.25	.08
14.	Educational Aspirations (LEA)	.47	.49
15.	Educational Plans (LEP)	.46	.51
16.	Vocational Plans (LVP)[1]	.56	.39

[1] N ≈ 400 males; 500 females

difference between the LVA and LVP pattern of correlations is found in a significant shift in the magnitude of r's for the variables of parental educational wishes. Thus, females present rankings of their vocational aspirations that are much closer to the educational level that their parents desire for them than was the case for their vocational plans. These correlations with parental educational wishes are also considerably larger for the females than for males. No such drastic change occurs in those correlations for males, whose vocational plans and aspirations remain about equally consonant with parental desires. That shift may (as previously inferred from the much lower correlation between LVA and LVP for females) suggest that the females see the "real world" of job possibilities as being quite different from their vocational desires or aspirations--in contrast to relative continuity shown by males in the ordering of their vocational priorities (planned or aspired to).

C. Educational Aspirations

Data pertinent to this aspect of student preferences for the future draw upon questionnaire response information dealing with hopes for educational attainment, parental wishes as reported by the student and the role of background or personal characteristics in shaping his or her educational aspirations. The logical lead question of: What educational level do high school students aspire to? results in a pattern of mean differences for sex and curriculum subgroups that is essentially similar to those found for the level of student educational plans. Part of the similarity may be based on a proximity effect for the two constructs, which are incorporated in a single item (SQ Item #29) and may

force a greater degree of similarity in responses than would have been the case if they were physically separated (as are the vocational plans and aspirations items of the questionnaire).

In contrasting Educational Plans and Aspirations, on the six-point scale the one readily expected difference found (as in virtually all prior literature) is that the mean Level of Educational Aspirations is consistently higher than the mean Level of Educational Plans. Thus, the overall group mean found for LEA at 4.5--which is midway between a Junior College and four-year College Level of Aspiration--is significantly higher than the mean level of Vocational Plans at 3.8 (educational plans falling somewhat below a Junior College level).

For the ANOVA results using LEA as a dependent variable and testing for differences by Sex and Curriculum, the Sex contribution was found to be dwarfed by the differences between curriculum groups.

Source	Mean Square	df	F-ratio
Sex	112.3	1	89.3
Curriculum	1820.5	2	1448.0
Error	1.2	9,618	
S X C	0.5	2	N.S.

Sex differences indicate that males aspire to significantly higher levels of education (M = 4.60) than do the females (M = 4.41). Ordering of the mean values over the three curriculum groups are (as was shown for educational plans) exactly as might be anticipated from knowledge of student educational background and vocational goals for those groups.

That is, students enrolled in an Academic curriculum have a marked desire for a much higher level of education (M = 5.33) than the General students (M = 4.35) who, in turn, have significantly higher aspirations than those of the Vocational curriculum groups (M = 3.85). Academic students would like to attain a rather high level of educational achievement, going beyond the four-year college degree to some level of graduate training. General students would aspire to a level just beyond a Junior College education, while Vocational students aspire to formal post-secondary education beyond high school and approaching a Junior College level of training.

Parental desires for educational attainment have often been viewed as playing a significant role in the educational desires of their student offspring. Whatever the social mechanisms by which this occurs, that source of encouragement (or discouragement) may have a very tangible impact on the student's view of his chances of receiving needed parental support--especially in the form of financial assistance. Thus, the student's perceptions of how he believes his parents see his educational future (the form of questionnaire data available here) may in itself constitute an important factor in defining the student's educational horizons. The initial point for consideration is one of: defining and contrasting, for each parent, the level of educational aspiration that he or she holds for the student (as perceived by the student).

ANOVA summaries for the educational wishes of each parent are presented below (based on SQ Item #91) with sex and curriculum as independent variables.

(a) Father's Educational Wish:

Source	Mean Square	df	F-ratio
Sex	95.3	1	89.5
Curriculum	2154.5	2	2022.7
Error	1.1	11,258	
S X C	1.6	2	N.S.

(b) Mother's Educational Wish:

Source	Mean Square	df	F-ratio
Sex	188.4	1	184.2
Curriculum	2104.5	2	2057.3
Error	1.0	11,258	
S X C	0.7	2	N.S.

The pattern of differences between means is found to be highly similar in the student report of educational wishes of each parent. Differences between curricula are at much higher levels of significance than is found between sexes and there is no significant interaction effect found in the ANOVA results for either parent. To give a more complete view of the contrast between parents' wishes, it is helpful to show the set of means for mother's and father's educational wishes by Sex and Curriculum group.

Table 15

Mean Parental Aspirations for

Student Educational Level

	Sex		Curriculum		
	Male	Female	General	Academic	Vocational
Father's Educ. Wishes	4.19	4.01	3.93	4.92	3.45
Mother's Educ. Wishes	4.26	4.00	3.97	4.94	3.48

The means of Table 15 indicate that the significant F-ratios stem from males perceiving either parent as having a higher level of educational aspiration for them than do the females, and from the Academic group seeing these parental wishes as being at a much higher level than either the General or Vocational groups. The slight tendency over the three curriculum groups for mothers to be the ones with consistently higher level wishes, is found to be entirely a product of the higher level of educational aspirations that mothers are reported to hold for their sons.

As might be assumed, the correlations between the students' assessments of their mother's and father's educational wishes are extremely high, i.e., at levels of about .90 (r = .89 for females and .92 for males). Similarly, the correlations are substantial between the way the student thinks his parents view his educational future and his own expressed educational wishes. Those correlations had been found (in Table 9) to be consistently at about .70 with level of student educational plans and will be seen to be in the mid .60's with level of educational

aspirations (Table 16). Oddly enough the students' educational aspirations do not produce as good agreement with perceived parental educational aspirations as students' educational plans. It is suggested that students see parental "desires" for their education as largely equivalent to intent or expectation (i.e., a plans concept).

Relationships Between Student Characteristics and Level of Educational Aspirations (LEA)

The pattern of correlations in Table 16 serves to round out and further substantiate the broad similarities produced with the other three plans and aspirations measures as dependent variables. Only moderate variations in levels of r are seen in any of those overall contrasts. Certainly, the LEA correlates, when contrasted by sex, appear very similar to those of LEP (just as those of LVA and LVP appear most similar in pattern to each other) and the overall interpretation would be essentially the same with regard to potential influences of Home-SES, achievement and school-environment sets of measures. The one notable difference in the LEA-LEP pattern of correlates is a fairly consistent superiority of levels of r for educational plans over those found for educational aspirations. The implication is one of greater overall predictability of the plans measure, which coincides with the conclusion reached by Brookover, et al. (1967) in their contrast of educational plans and aspirations as correlates of achievement and SES. However, this remains to be verified with subsequent longitudinal data in a truly predictive framework and for a broad range of occupational and educational performance criteria.

Table 16

Correlations of Level of Educational Aspiration (LEA) with Student Background and Personal Characteristics

	Student Characteristics	LEA Males	LEA Females
1.	Family Income	.25	.23
2.	Father's Education	.29	.33
3.	Mother's Education	.18	.28
4.	Father's Occupation Level	.27	.25
5.	Class Rank	.37	.32
6.	Vocabulary	.34	.28
7.	Math	.41	.36
8.	Father's Educ. Wish	.65	.64
9.	Mother's Educ. Wish	.66	.65
10.	School SES (% Fath. Prof.)	.22	.17
11.	School Influence (% go to College)	.26	.20
12.	School Pers. Influence (Tchers. Courses)	.29	.30
13.	# Avail. Voc. Educ. Courses	.36	.22
14.	Vocational Aspirations (LVA)	.47	.49
15.	Vocational Plans (LVP)	.48	.42
16.	Educational Plans (LEP)	.66	.70

Overview of Findings for Student Aspirations

Statements reported here represent key findings from the three categories of aspirations analyzed above (General, Vocational and Educational). The statements made are only those derived from statistically significant results obtained in the analyses.

A. General Aspirations

·· Following high school, students aspire, primarily, to go to work full time or to go to college--just as was found for general plans. The one notable comparative difference is that a slightly smaller percentage of them would aspire to pursue these two activities than had planned to do so. In larger proportion than was the case for plans, however, the students would prefer more leisure pursuits such as traveling or just taking a break after high school.

·· Academic students, in largest proportion, desire to go on to college. Going to work remains (as it did for general plans) the dominant aspiration for General and Vocational curriculum students.

·· As lifetime aspirations, students desire most to be successful in their line of work, to find work that is steady and to have a successful marriage and family life. Males place greatest stress on the first two occupational desires and females on the marital one (although an interaction effect indicates that Academic curriculum females place much less stress on marriage than females in the other curricula). Steady work is the only aspiration that distinguishes between curriculum groups and is most highly prized by the Vocational students.

B. Vocational Aspirations

·· The career or occupational category to which students aspire in largest proportion is clearly the Professional one. Academic students have, by far, the highest representation in that category. However, the General students also choose that vocational level as a dominant one, a result somewhat at odds with their high-school training and anticipated (planned) educational goals. Primary choices of Vocational students are the seemingly more appropriate Clerical and Craftsman occupational groupings

·· Characteristics of jobs that students feel influence their vocational aspirations consist of their being helpful and socially useful, of providing an opportunity to work with people rather than things, and to be creative. These characteristics tend to be most highly valued by the Academic students and by females. Although rated relatively low among desired characteristics by students in general, the most valued job characteristic for males in the Vocational curriculum is the opportunity to make a lot of money.

·· The zero-order correlations between Level of Vocational Aspirations (LVA) and student personal or background characteristics resemble, closely, the pattern and magnitude of r's found for Level of Vocational Plans (LVP) in terms of the other plans and aspirations measures as well as the Home-SES, cognitive-academic and school characteristics variables. For both LVA and LVP the correlates for males are found to be uniformly higher in magnitude than they are for females.

·· Mother's educational level is found to have a strikingly higher r with females' vocational aspirations than with males; whereas, father's educational level is about equal in its relationship for both sexes. In another notable sex comparison, the school characteristic of number of vocational education courses offered bears negligible relationships to vocational aspirations and plans for females but significantly positive ones for males.

C. Educational Aspirations

·· Students aspire to levels of post-high school education commensurate with their educational background (i.e., curriculum enrollment). That is, Academic students aspire to much higher levels of education than General students who, in turn, aspire to a higher level than Vocational curriculum students.

·· As was found for contrasts between students' vocational aspirations and plans, aspirations are considerably higher than plans for educational choices, with males aspiring to higher levels than females.

·· Father's and Mother's aspirations for the student's educational attainment (as reported by the student) are highly related to the student's level of educational aspiration (r's in the mid .60's) and to each other (r ≈ .90). There are, however, differences in mean levels of parental aspiration as a function of sex and curriculum group membership. Thus, both parents are seen to have higher educational aspirations for boys than for girls. In addition,

parents of students in the Academic curriculum are reported to have the highest educational aspirations, while the lowest level of parental desires for educational attainment are found for parents of Vocational students.

·· Student background or personal characteristics, when correlated with Level of Educational Aspirations (LEA), again produce patterns of zero-order r's broadly similar to those obtained for LVP, LEP, and LVA as dependent variables. The one primary difference found is in the contrast between educational aspirations and educational plans which indicates that the level of plans measure is consistently higher in its correlations with Home-SES, Achievement, Parental educational wishes, and school characteristics than level of aspirations--a consistency that does not hold when contrasting Vocational plans and aspirations.

Achievement Correlates of Plans and Aspirations

Any use of plans and aspirations as meaningful constructs, implies a degree of value as correlates of actual achievements in a variety of areas--i.e., their validity in relation to defined performance criteria. For the available student sample, collected during one relatively short period of time, it is possible to determine only concurrent relationships with achievement and to do so using the available measures of verbal, arithmetic, and academic abilities. Those particular r's, although previously presented in the tables summarizing the background correlates, are worth separate examination here.

Table 17

Concurrent Correlations of Achievement with Level of Plans and Aspirations

(N ≈ 1550)

		Class Rank	Vocabulary	Math
Vocational Aspirations (LVA)				
	Male	.28*	.30	.33
	Female	.26	.25	.34
Vocational Plans (LVP)[1]				
	Male	.36	.33	.37
	Female	.34	.25	.34
Educational Aspirations (LEA)				
	Male	.37	.34	.41
	Female	.32	.28	.36
Educational Plans (LEP)				
	Male	.40	.35	.44
	Female	.38	.31	.42

*All r's shown are significant at .01 level

[1]N's ≈ 900

From the correlations shown in Table 17, it is immediately apparent that cognitive achievements uniformly show significant and moderate levels of relationship to expressed plans and aspirations of students. Those correlations with achievement are--with only one exception in the between-sex contrasts--found to be higher for males than females. When comparing plans and aspirations within sex, the two plans measures (LVP, LEP) show consistently higher correlations with the three achievement scores than do the aspirations measures (LVA, LEA). Furthermore, level of educational pursuits (planned or desired) are more highly correlated with academic and cognitive achievements than are the vocational ones. Again, any implication of greater potential for the educational choices, as better predictors of later criteria of cognitive achievement, must depend on confirmation from longitudinally obtained samples and the use of a wider range of cognitive performance outcomes.

"Reality" of Educational and Vocational Choice (Plans--Aspirations Discrepancy)

One possible approach to defining a measure of reality for student vocational or educational choices may be sought in the discrepancy between his expressed desires and what he actually plans to accomplish. It might be hypothesized, for example, that students whose aspirations far exceed their intentions, with regard to school and careers, represent the ones who are more likely to remain continually dissatisfied with their social or occupational roles as a result of efforts that are unrealistic (inadequate) in comparison to their desires. As plans move closer to expectations, it might be said that the individual is

"tailoring" his intended activities to his wishes (i.e., his actions match his desired goals). It is evident that an aspirations-plans discrepancy score represents an approach to the "reality" construct that makes no particular assumptions about capabilities (attitudinal or cognitive) possessed by the individual.[1]

The intent in this section is to examine initially and, on the basis of limited available information, the role of an Aspirations-Plans difference score in order to determine whether its application might be worth pursuing with more extensive and appropriate performance criteria from future NLS studies. The first and most meaningful look at that role would be to determine: The effects of sex and curriculum group membership on reality of choice in student plans and aspirations. For Educational Reality (LEA minus LEP), the analysis (based on the scores of SQ Item #29) indicates that there is a barely significant difference between the sexes on this discrepancy score, but a major difference between the curriculum groups.

Source	Mean Square	df	F-ratio
Sex	5.1	1	7.2
Curriculum	117.6	2	167.4
Error	0.7	9,044	
S X C	2.6	2	N.S.

[1]Realism of choice can also be viewed more conventionally as based on the matching skill levels to "appropriateness" of plans and aspirations (in some way). From that perspective, the previous analyses may be said to show that the students, as a group, are fairly realistic insofar as they display moderately strong relationships between their achievement levels and their levels of desires and plans.

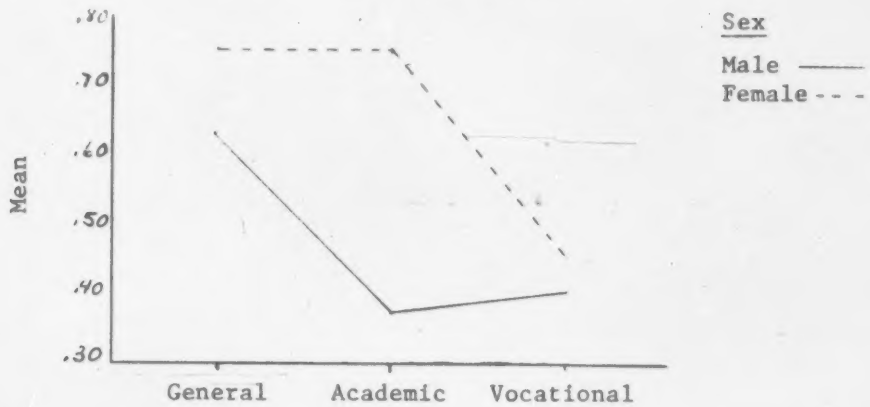
Males show slightly less discrepancy (M = 0.81) than females (M = 0.85), while students in the Academic curriculum stand distinctly apart (M = 0.61) from both the General (M = 0.92) and Vocational students (M = 0.96), and thus present a better reality match between their educational aspirations and plans. This much greater expectation of accomplishing educational desires occurs for the Academic students, despite those desires being at a significantly higher level than is found for the other two curriculum groups. The General and Vocational students seem to be far more likely to wish for an educational future that does not parallel their intended action.

The analysis for Vocational Reality (LVA minus LVP) shows an interesting reversal in its effects when compared to the Educational Reality score (SQ Item #25 score minus SQ Item #96 score).

Source	Mean Square	df	F-ratio
Sex	14.4	1	33.3
Curriculum	3.5	2	8.2
Error	0.4	967	
S X C	2.8	2	6.4

Sex now demonstrates a more significant effect on Vocational Reality than does curriculum group membership. Males are found much less discrepant in their vocational behaviors and their desires for future vocational accomplishment. Male vocational plans and aspirations are, therefore, more in line with regard to the anticipation of their future careers than is the case for females (Males M = 0.45; Females M = 0.65).

The lesser degree of difference between curriculum groups, although barely significant, is of interest in that it is the Vocational students who, as a group, appear to strike the better balance between their vocational plans and aspirations (M = 0.43) (i.e., greater reality of choice). The Academic group is next in this regard (M = 0.56) and the General group evidence the least realism in vocational choice (M = 0.69). But, it is the significant interaction effect that defines an important qualification to the overall conclusion and modifies it considerably. From the graph below it becomes immediately evident that the Academic males show the least discrepancy of all groups and that it is the Academic females who are, by contrast, overwhelmingly more discrepant in planning to achieve the vocational outcomes that they desire.



Perceptions of females in regard to fulfilling their career expectations seem to be severely "distorted" by a wide plans and aspirations gap--that reality gap being especially large for those females with the higher levels of ability and education (i.e., the academically trained high school females).

One other approach to testing the role and value of the reality score would be in terms of its relation to tangible student educational decisions and activities (beyond the beliefs, plans, and hopes that make up virtually the entire Student Questionnaire). With the present data, it is possible to ask whether the students' educational reality score is in any way related to such an "action-decision" as enrolling in available special training programs (i.e., Cooperative Vocational Education, Work Study, Neighborhood Youth Corps, Talent Search, and Upward Bound--as presented in SQ Item #6). Point biserial r's were obtained between program participation (No/Yes) and the LEA-LEP difference score for each sex and for each curriculum group over each of the five special education programs. In the resulting correlations, there was not a single one of sufficient level to warrant interpretive comment. Almost all r's were positive in direction but none exceeded .08 in magnitude. Although this decision variable offers nothing to support the value or external validity of the "reality" score, it nevertheless represents only one performance measure and remains dependent on student report. A more acceptable assessment of the predictive value (validity) of an aspiration-plans difference score would await a wider range of specific, post-high school, educational and vocational criteria of the sort likely to be made available in the continuing data-gathering efforts for the National Longitudinal Study.

Section II: Causal Analysis

Basic to the models presented in this results section is the idea of identifying causation in explaining the basis of student educational choices. Simon (1954) cites Hume as asserting that all we can ever observe is covariations; a point which remains unchallenged for the naturalistic setting. Hopefully the social sciences have finally reached a stage in their theoretical development that allows hypothesized causal models to be stated in a mathematical form and in a way that allows their agreement with observed covariances to be examined. We would like to have a theory strong enough to permit us to say "if A, then B"--i.e., that A causes B. Though we can never completely validate or prove such a statement, we can examine its expected consequences by examining the goodness of fit of the generated covariances, under a hypothesized model, to the observed covariances. We are then using the term "cause" in the sense of Simon (1954), Wright (1960), and Blalock (1964) in causal analysis, and of many economists in structural analysis.

In order to estimate both the strength of association and the relative importance of causal variables, we will use Jöreskog's (1972, 1973) maximum likelihood estimation procedure for structural equations (LISREL). Although the many advantages of this approach were pointed out earlier, certain aspects of the procedure require clarification. The LISREL model, when given the proper structural equations (i.e., the mathematical equations that a given model generates), provides a solution with the following properties:

(1) All parameters (path coefficients and correlations) are estimated simultaneously. That is, information from the total model is used in estimating any one parameter. Thus all available information is used.

(2) There is an estimated causal effect of one variable on another which, in turn, may have two estimable components: i.e., the direct effect (unmediated by any intervening variables) and the indirect effect (which, of course, takes into consideration one or more intervening variables).

(3) An overall test of how well the hypothetical model fits the obtained data can be made.

(4) Where there are multiple observed indicators of a construct such as SES, there is a pure or "error-free" estimate of this construct's effect on other constructs in the causal model. For example, rather than use any one of the error-prone observed measures by itself to be a proxy for a concept such as SES, one can elect to make use of all the information available. This "error-free" construct is similar to a factor score, but is not subject to the estimation errors involved in computing factor scores from fallible observed measures. One can think of the structural or path coefficients, which estimate the causal effect of one construct on another, as being

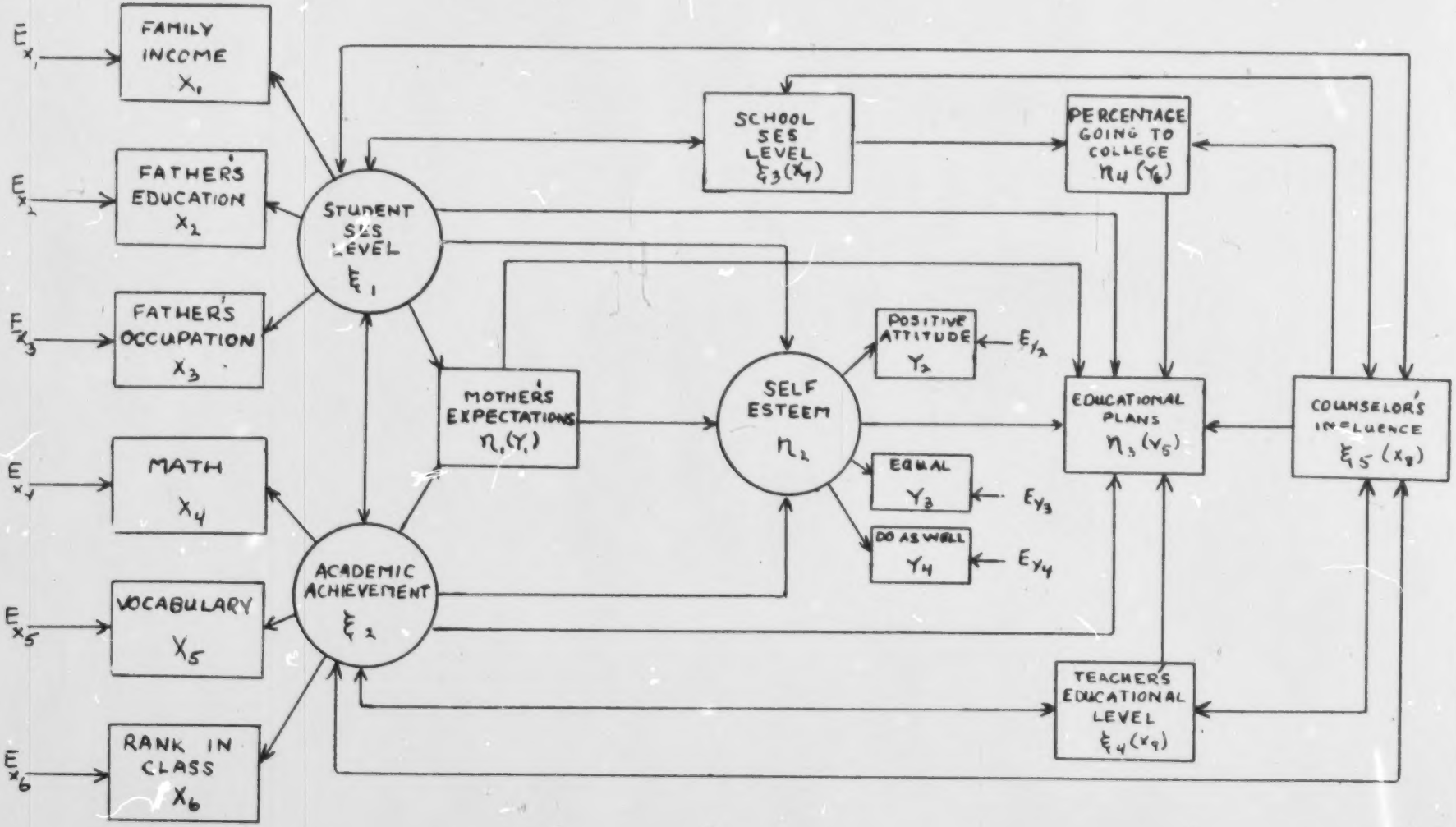
corrected for both reliability and validity. Thus it is possible to minimize the dilution effects of measurement error through the use of unmeasured variables.

(5) There is a simultaneous estimation of relationships between constructs (causal and otherwise) based on multiple indicators which virtually eliminates the "bouncing beta" problem (instability of regression coefficients) that permeates most least squares regression approaches when there are high collinearities among the causal variables.

Some of the above properties and their positive characteristics will become clearer in moving from the examples to the study results. Figure 1 presents the traditional pictorial presentation of the general structural (causal) model underlying the first analysis. The arrows going in one direction specify the direction of causality of one variable acting on another. Arrows between two variables or concepts going in both directions signify that the direction of causality could not be determined on rational or temporal grounds. Path coefficients will be estimated for one-directional arrows, while correlations (no causal relationship) will be estimated for two-way arrows. The path coefficients are analogous to partial regression coefficients and they will be scaled by an estimation procedure, such that their relative size is proportional to their importance as a determinant. Succeeding figures will have the estimated path coefficients placed on their appropriate arrows. Associated with each figure is a table which will give the indirect effects of each variable as well as the direct effects, the

Figure 1

Structural Model I

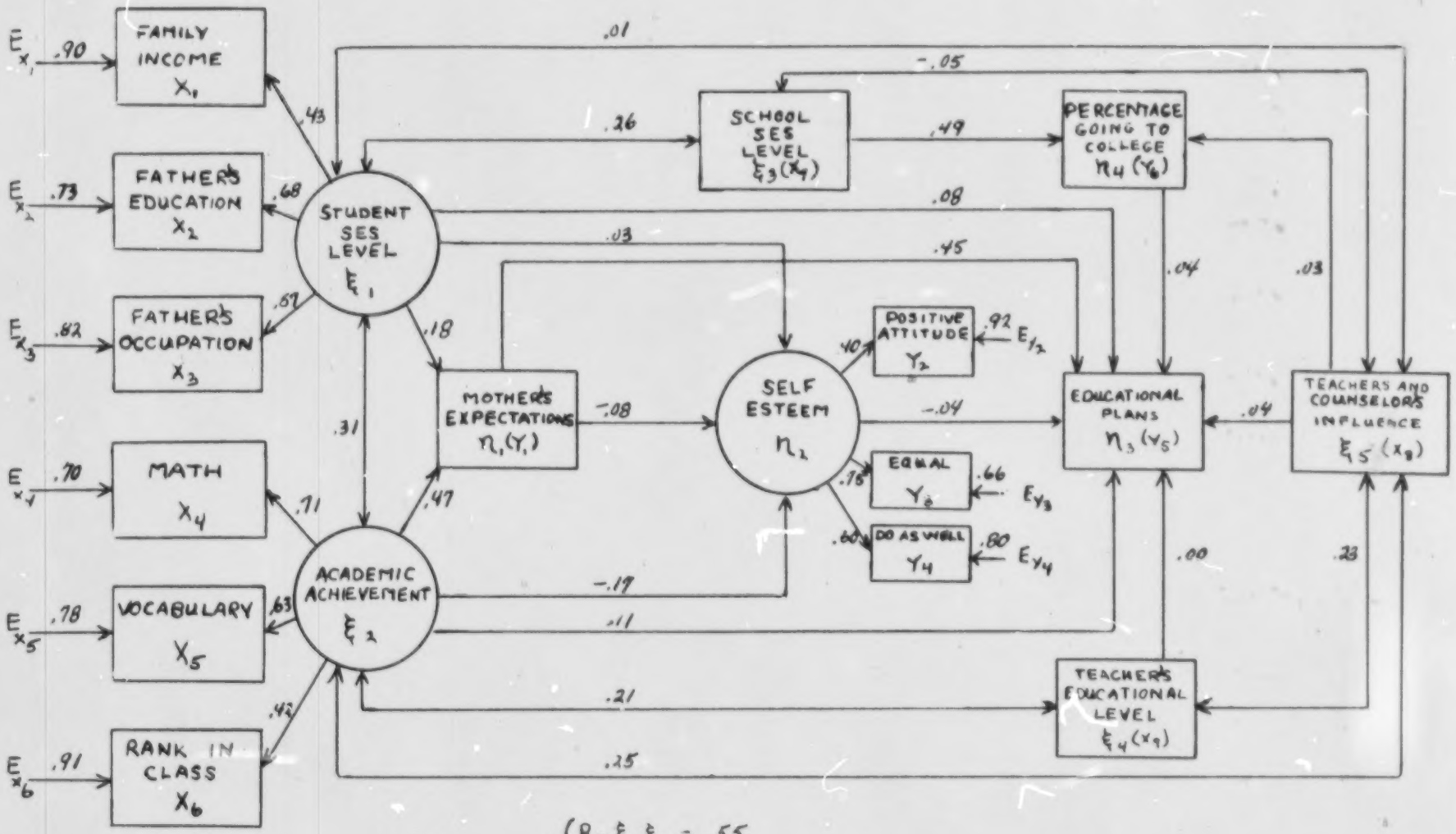


sum of which is the total hypothesized effect. For example, in Figure 1 there are two paths from Academic Achievement to Self-Esteem. The direct effect of Academic Achievement on Self-Esteem is estimated by the path coefficient associated with the single direct path, while the indirect effect is the product of the path coefficient from Academic Achievement to Mother's Educational Expectations and the path coefficient from Mother's Educational Expectations to Self-Esteem. We feel that this pictorial presentation with associated tables describing the major determinants of Mother's Educational Expectations (with respect to her son or daughter), Self-Esteem, and Educational Plans, provides a convenient summarization of the data. That is, the path analysis depiction, with arrows indicating what variables are acted upon, accompanied by coefficients so scaled to indicate their relative importance as determinants, is readily understandable to the nonstatistically-oriented reader. It is felt that all but the most complicated designs can be reduced to this pictorial presentation.

Figures 1a through 1d present the results of solving the structural equations underlying the causal Model I (Figure 1) for Blacks, Whites, Males, and Females, respectively. This model deals with Level of Educational Plans as the primary endogenous variable. Given the hypothesized model, maximum likelihood estimation procedures were used to generate a unique population variance-covariance matrix which, in the maximum likelihood sense, maximized the likelihood of the observed variance-covariance matrix. The resulting path coefficients were rescales (standardized) for ease of interpretation. Relative sizes of path coefficients within

Figure 1a

Structural Model I for Black Sample

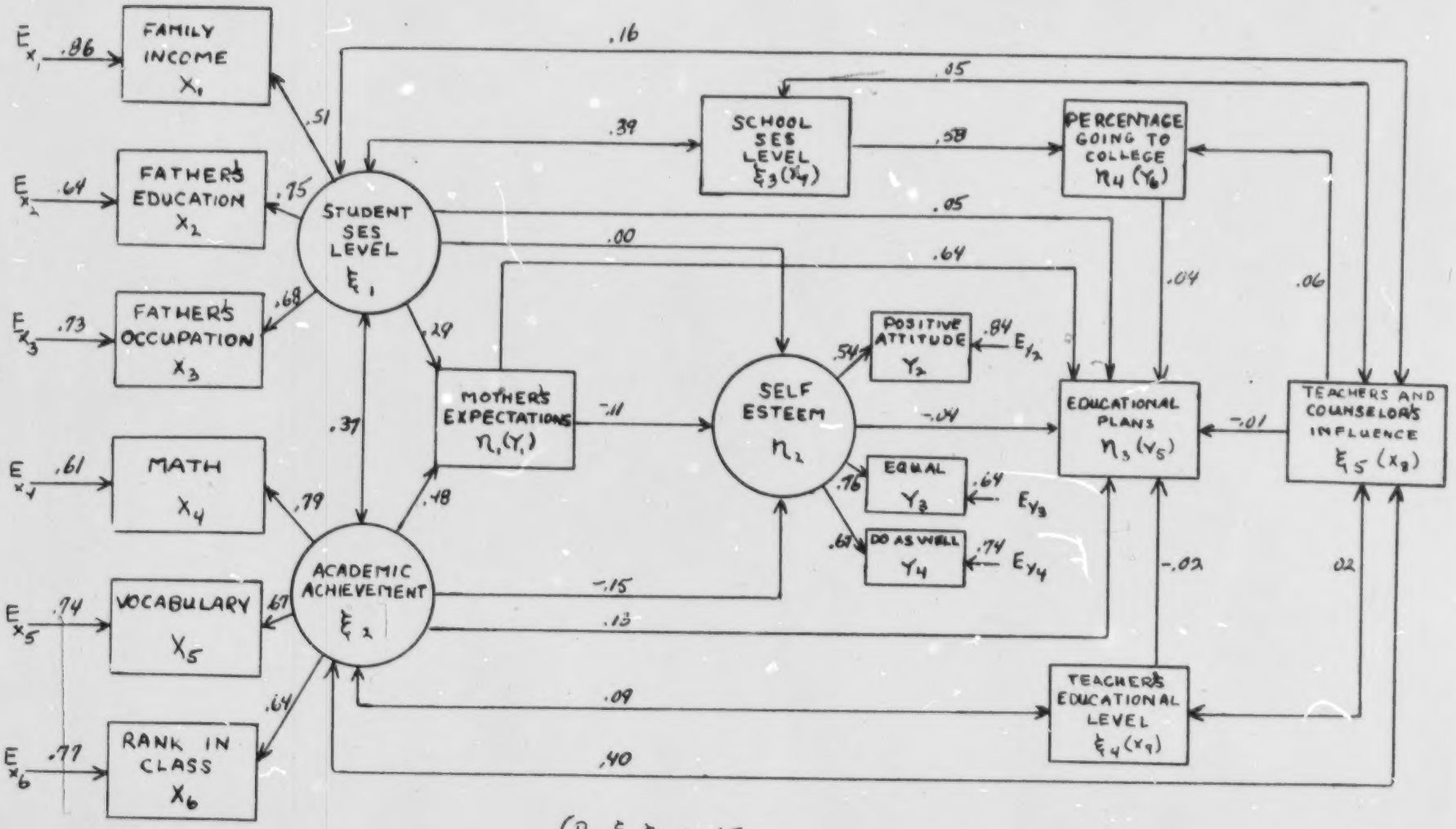


Multiple Correlation

$$\begin{cases} R_{\eta_1 \xi_1 \xi_2} = .55 \\ R_{\eta_2 \eta_1 \xi_1 \xi_2} = .22 \\ R_{\eta_3 \eta_1 \eta_2 \eta_4 \xi_1 \xi_2 \xi_4 \xi_5} = .57 \\ R_{\eta_4 \xi_3 \xi_5} = .49 \end{cases}$$

Figure 1b

Structural Model I for White Sample



Multiple Correlation

$$R_{\eta_1 \xi_1 \xi_2} = .65$$

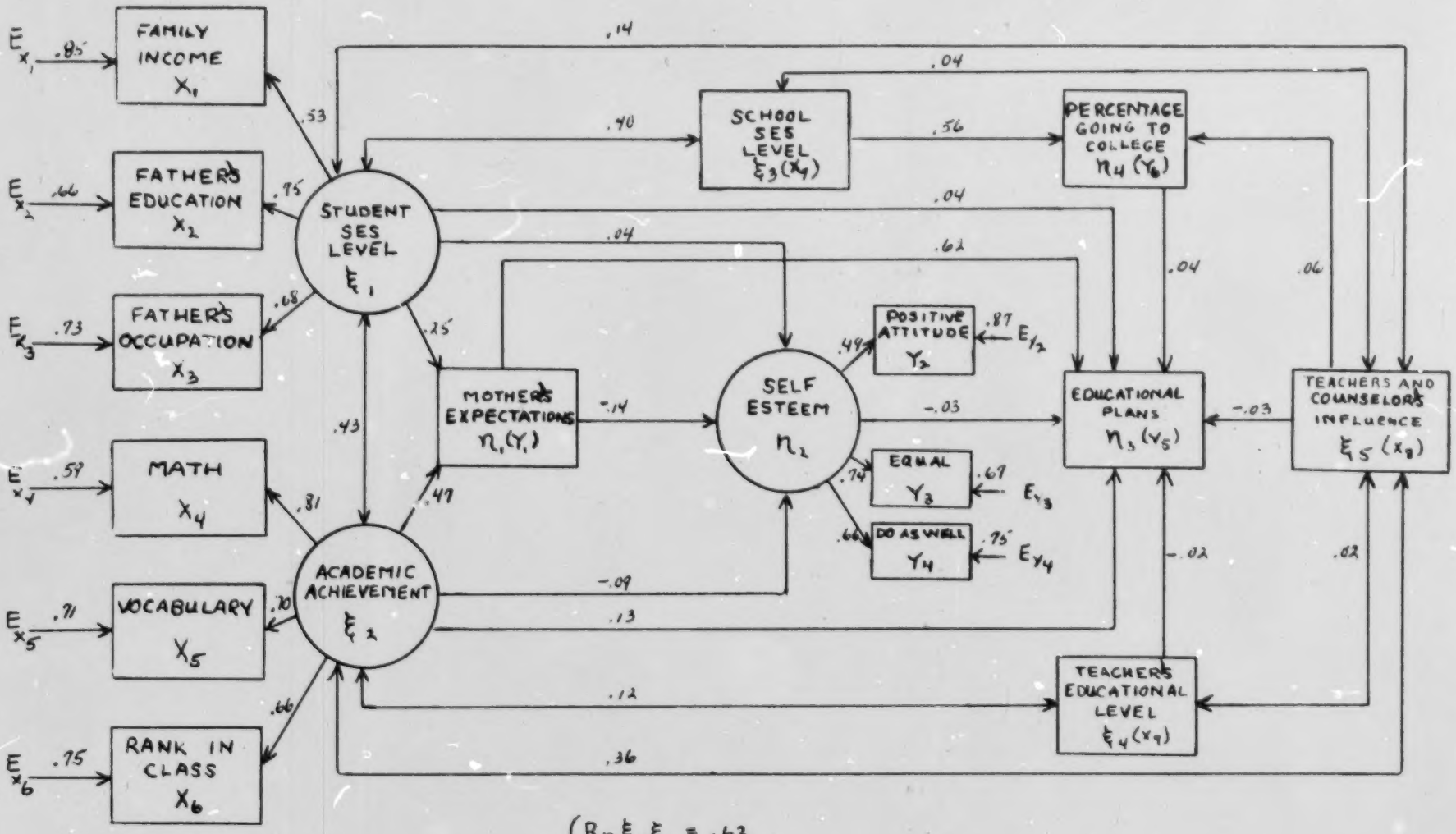
$$R_{\eta_2 \eta_1 \xi_1 \xi_2} = .23$$

$$R_{\eta_3 \eta_1 \eta_2 \eta_4 \xi_1 \xi_2 \xi_4 \xi_5} = .76$$

$$R_{\eta_4 \xi_3 \xi_5} = .58$$

Figure 1c

Structural Model I for Male Sample

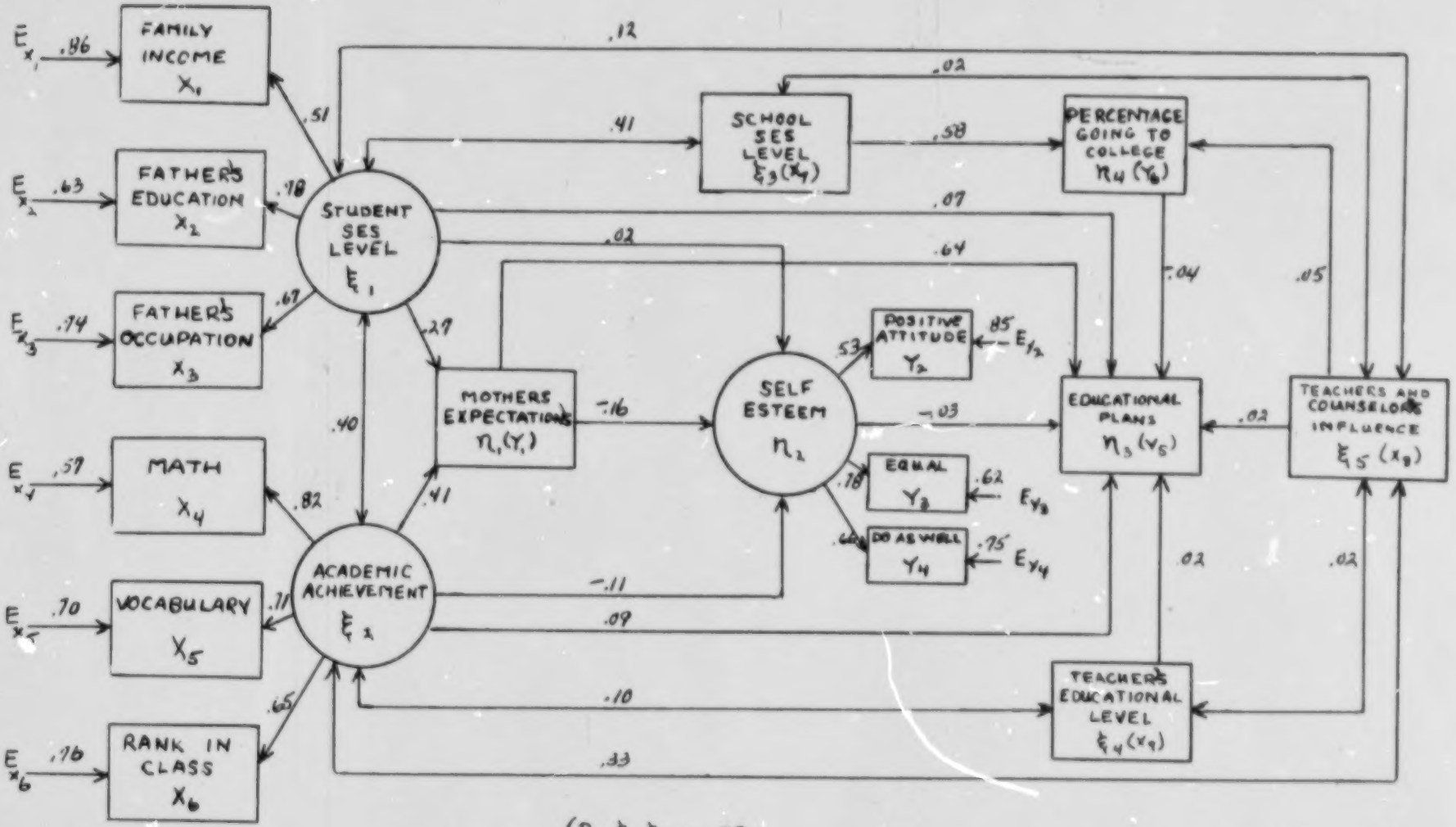


Multiple Correlation

$$\begin{cases} R_{\eta_1 \xi_1 \xi_2} = .62 \\ R_{\eta_2 \eta_1 \xi_1 \xi_2} = .19 \\ R_{\eta_3 \eta_1 \eta_2 \eta_4 \xi_1 \xi_2 \xi_3 \xi_4 \xi_5} = .73 \\ R_{\eta_4 \xi_3 \xi_5} = .56 \end{cases}$$

Figure 1d

Structural Model I for Female Sample



Multiple Correlation

$$R_{\eta_1 \xi_1 \xi_2} = .59$$

$$R_{\eta_2 \eta_1 \xi_1 \xi_2} = .22$$

$$R_{\eta_3 \eta_1 \eta_2 \eta_4 \xi_1 \xi_2 \xi_4 \xi_5} = .74$$

$$R_{\eta_4 \xi_3 \xi_5} = .58$$

samples can be compared and contrasted. However, comparisons of the absolute size of corresponding standardized path coefficients across samples should be interpreted cautiously unless the variances (true variances in the case of unmeasured variables) are approximately the same (Schoenberg, 1972). Thus all conclusions concerning differences in magnitude of causes based on comparing absolute sizes of path coefficients across samples will only be made if the variances are relatively the same. Due to the large sample sizes within each subgroup, literally all non-zero path coefficients are statistically significant from zero, and thus we have arbitrarily set the lower limit for practical significance at .06.

In the figures, the circles represent unmeasured or "true" variables (constructs) and the rectangles represent observed or fallible variables. Therefore, in Figure 1, Student's SES Level, Academic Achievement, and Self-Esteem are all constructs measured without error. For example, we might wish to estimate relationships between "true" variance in the SES construct and other variables in the structural model. True variance may be understood to mean that part of the total SES variance which covaries with all its indicators and which has been rescaled in terms of one of its indicators. Returning to Figure 1a, we note that the "true" correlation between SES and Academic Achievement for Blacks is .31 which, as one might expect, is higher than the correlations between any of the observed fallible measures of SES and Academic Achievement.

Structural Model I

(a) Black Sample: Model I. Turning to the Black sample data presented in Figure 1a, we note that Mother's Educational Expectations for her son or daughter is much more highly a function of "true" academic achievement (path coefficient = .47) than "true" socioeconomic class (path coefficient = .18). In short, the construct Academic Achievement is over two and one-half times as important a determinant of Mother's Educational Expectations as is the construct SES. It is also interesting to note that, for the Blacks, the one most valid indicator of SES is Father's Education, while math scores are the most reliable and valid single indicators of Academic Achievement. Turning our attention to the mediating variable Self-Esteem, we note that of the hypothesized determinants of Self-Esteem, only Academic Achievement and Mother's Educational Expectations have any impact on Self-Esteem.[1] Surprisingly, for Blacks, and for that matter, Whites, as well as sex groups, SES has no direct impact on the individual's Self-Esteem. Although it appears that the construct Academic Achievement is twice as important a determinant of the construct Self-Esteem as is Mother's Educational Expectations, there is still considerable unpredictable true variance remaining in Self-Esteem. It is quite possible that measures of popularity among peers or athletic ability might help to explain individual differences in Self-Esteem. Further on in Model II we will look at participation in athletics as an additional determinant of Self-Esteem. The reader should

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[1] Path coefficients appear as negative values only because of Self-Esteem scale direction.

also note that the one most valid and reliable indicator of Self-Esteem is one's perception of oneself as being equal to one's peers, while the least reliable and valid indicator is possessing a positive attitude about oneself. It would appear that for some individuals there is a lack of congruency between feeling equal to others and having a positive attitude toward oneself. This loading pattern with respect to Self-Esteem is not unique to Blacks, but is replicated in the remaining three sub-groups.

Educational plans, the primary endogenous or dependent variable, is fairly well explained by the hypothesized determinants (both direct and indirect; also note multiple correlations at bottom of Figure 1a. With respect to the causes of the individual's educational plans, we find that Mother's Educational Expectations, sometimes designated as the "parental-press proxy," has a relatively large direct effect (i.e., the path coefficient equals .45), while Academic Achievement and Student SES Level have relatively minor but similarly direct effects. Level of Self-Esteem has little practical impact on Educational Plans (path coefficient = .04), as do Counselor's Influence (path coefficient = .04), Teacher's Educational Level (path coefficient = .00), Peer Pressure (path coefficient = .04). Counselor's Influence is measured by responses to an item having to do with the importance of counselor advice in one's post-high school educational plans, while Peer Educational Pressure is measured by the percentage of one's classmates planning to go to college. Although the direct effect of Academic Achievement appears small relative to Mother's Educational Expectations, it has a number of indirect

effects (i.e., effects mediated by other variables in the system). That is, the indirect effects of Academic Achievement on Educational Plans sum to .33 (see Table 18). The largest indirect effect of Academic Achievement is, of course, simply mediated by Mother's Educational Expectations (.47 x .45 = .20). It is interesting to note the somewhat minor role SES plays for the Blacks in this particular model in that its total hypothesized effects (direct plus indirect) is relatively small compared to Academic Achievement and Mother's Educational Expectations. The pattern of the loadings of the observed indicators on the construct are similar to what is found in the White sample, yet it is possible that some of the SES carriers, such as goals and values, which are usually associated with the White middle-class, may not be perceived as realistic for Blacks. For example, in comparison to the Whites, Black's Level of SES has little influence on parental press (Mother's Educational Expectations) for climbing higher on the educational ladder.

Another interesting comparison between Blacks and Whites is the relationship between Academic Achievement and the relative influence of counselors (see Figures 1a and 1b). For Whites, there is a high relationship between Counselor's Influence on Post-High School Plans and Academic Achievement (r = .40), while for Blacks it is considerably lower (r = .25).

It would seem that the high-achieving Blacks are only slightly more likely to depend on the advice of counselors for post-high school educational advice than are the low-achieving Blacks. Conversely, the high-achieving Whites are much more likely to seek the counselor's

Table 18

Model I

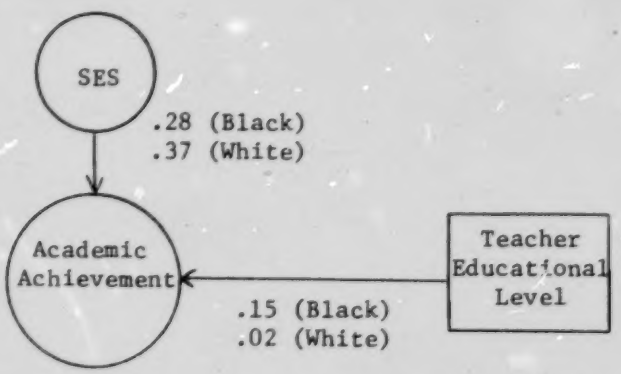
Direct and Indirect Effects on Dependent Variables
by Hypothesized Causes

(Black)

Causes	Direct Effects	Total Indirect Effects	Total Hypothesized Effects
Mother's Educational Expectations			
Student SES	.18		.18
Academic Achievement	.47		.47
Self-Esteem			
Student SES	.08	-.01	.07
Academic Achievement	-.17	-.04	-.21
Mother's Educational Expectations	-.08		-.08
Educational Plans			
Percentage Going to College	.04		.04
Student SES	.08	.08	.16
Mother's Educational Expectations	.45	.00	.45
Self-Esteem	-.04		-.04
Academic Achievement	.11	.22	.33
Teacher's Educational Level	-.00		-.00
Counselor's Influence	.04	.00	.04
Percentage Going to College			
Counselor's Influence	.03		.03
School SES Level	.49		.49

advice in reference to post-high school educational plans. It is possible that many high-achieving Blacks still do not perceive college education as a viable avenue to success in White society. It is also possible that the counselors simply do not fulfill the needs of Blacks and are more oriented toward White college-going needs.

If one wished to estimate the determinants of Academic Achievement from the data available in Model I, we might choose to have one-way arrows to Academic Achievement from SES and Teacher's Educational Level. The solution to the modified model is presented for both Blacks and Whites as follows:



The reader will note that for Whites, the most salient causal effect on Academic Achievement by far is SES while, for Blacks, Teacher's Educational Level as well as SES have salient effects on Academic Achievement. In other words, there is a strong case here for improving the quality of the teachers where Black students are involved. It is quite likely that if we had multiple measures of teacher quality (e.g., National Teacher Examinations [NTE] scores), the resulting "error-free"

teacher quality variable would have even greater effect on achievement. It would appear from this Model I analysis that both the quality of counseling and teaching might be improved where Blacks are concerned.

(b) White Sample: Model I. For the most part, the patterns of the observed indicators' loadings or their respective constructs, SES, Academic Achievement, and Self-Esteem for the White sample are very similar to those of the Black sample (see Table 19). In general, the level of correlations are somewhat higher (e.g., for the Whites, Father's Educational Level attained is more consistent with the occupational level attained). This may simply reflect the arbitrary blocks which society in the past has imposed on Blacks in their attempts to become upwardly mobile occupationally.

Another interesting dissimilarity is the relatively greater incongruence between Blacks' tested achievement (or ability) and their rank in class. It is felt that part of this inconsistency may be due to the fact that some high-ability Blacks are attending middle-class schools with tough grading standards, while others attend inner-city schools where the grading may be less rigorous. Additional hypotheses with regard to this phenomenon will be entertained under Model II. As pointed out earlier in the discussion of the Black results, SES seems to have a greater impact on the behavior of the White students. In particular, for Whites, Parental Press (Mother's Educational Expectations) is proportionately more dependent on SES level than is the case with Black students. Inspection of Tables 22 and 23 shows that both the direct and more particularly the indirect effects of SES on educational plans

Table 19

Model I

Direct and Indirect Effects on Dependent Variables by Hypothesized Causes

(White)

Causes	Direct Effects	Total Indirect Effects	Total Hypothesized Effects
Mother's Educational Expectations			
Student SES	.29		.29
Academic Achievement	.48		.48
Self-Esteem			
Student SES	.00	-.03	-.03
Academic Achievement	-.15	-.05	-.20
Mother's Educational Expectations	-.11		-.11
Educational Plans			
Percentage Going to College	.04		.04
Student SES	.05	.19	.24
Mother's Educational Expectations	.64	.00	.64
Self-Esteem	-.04		-.04
Academic Achievement	.13	.32	.45
Teacher's Educational Level	-.02		-.02
Counselor's Influence	-.01	.00	-.01
Percentage Going to College			
Counselor's Influence	.06		.06
School SES Level	.58		.58

are considerably greater for the White students. Also, for Whites, there is, as one might expect, a correlation (r = .16) between SES level and the influence of the counselor on post-high school decision-making. For the Black sample there is no evidence of increased counselor influence as one steps up the SES ladder. Thus, SES appears to be relatively internally consistent (i.e., the factor pattern is consistent across races), yet some of the external relationships with SES differ both in level and patterns.

It is possible that Blacks have been slow to assimilate all the values and goals that are common to members of the White society as they progress up the SES ladder. The more likely situation, however, is that simply too few Blacks have had the chance to progress high enough on the socioeconomic ladder to avail themselves of the resources necessary to pursue middle-class goals and aspirations. This latter hypothesis is borne out by an examination of the means on the SES indicators for Blacks and Whites. In almost all cases the Black SES means are one-half to a full standard deviation below the White SES means. This is the one comparison across samples (i.e., comparison where SES is a determinant) where we have to be extremely careful because of the differences in both level and variances across races. In fact, inspection of the raw score path coefficients suggests that SES is almost as important a determinant of Mother's Educational Expectations and Educational Plans for Blacks as for Whites. The raw score path coefficients, however, for Mother's Educational Expectations and Academic Achievement, in general, reflect the standard score weights, thus increasing our confidence in their interpretation.

Further indications of differences in goodness of fit of particular segments of Model I across races can be inferred from the comparison of the corresponding multiple correlations found at the bottom of Figures 1a and 1b. For example, the multiple correlation estimated from regressing Mother's Educational Expectations on SES and Academic Achievement is considerably lower for Blacks than for Whites (Black = .55; White = .65). Similarly, the variations in White Educational Plans is much better explained by the model than is the Black Educational Plans (Black = .57; White = .76). In the first case (the prediction of Mother's Educational Expectations), the better fit for the White model is due to the greater relationship between SES and Mother's Educational Expectations for Whites. In the prediction of Educational Plans, however, the better fit for Whites is due to the greater impacts, direct and indirect, of SES, Academic Achievement and, in particular, Mother's Educational Expectations on Educational Plans. This becomes clearer as one examines Tables 18 and 19, comparing the corresponding direct and indirect effects of Mother's Educational Expectations and Academic Achievement on Educational Plans. As one would expect from the above discussion, the overall goodness of fit of the total model is somewhat better for Whites than for Blacks, suggesting that other factors which were not included (hypothesized) may be necessary for Blacks. However, in general, there are more similarities than differences in the structural models for the two races.

(c) Male and Female Samples: Model I. The results of fitting Model I to the Male and Female samples suggest little evidence for sex differences, and thus their results are combined here (see Figures 1c

and 1d). The pattern of loadings of the observed indicators on their respective constructs--SES, Academic Achievement, and Self-Esteem--are virtually identical. There is a slight tendency for Mother's Educational Expectations to be governed more by Academic Achievement in the case of boys than girls. It is possible that there are other social dictates which enter into a mother's decision with respect to her daughter's future education. Further evidence for the importance of nonintellectual factors in a female's educational plans are the relatively larger (compared to males) indirect and direct effects of SES on Educational Plans (see Tables 20 and 21). Conversely, Academic Achievement has larger direct and indirect effects on Educational Plans for males than for females. The multiple correlations associated with the regression of Mother's Educational Expectations on SES and Academic Achievement is smaller for females than for males (females: $R = .57$; males: $R = .62$), which is consistent with the above statements. That is, knowledge of Academic Achievement and SES goes further in explaining Mother's Educational Expectations for males than for females. The remaining multiple correlations (at the bottom of Figures 1c and 1d) indicate that the remaining endogenous (dependent) variables have similar multiple correlation across sexes and they provide equally good fits for both male and female. Also consistent with the above is the fact that the overall fit of the <u>total</u> model is slightly better for the males than for the females, suggesting additional factors are necessary to explain some of the variance in the female model.

Table 20

Model I

Direct and Indirect Effects on Dependent Variables by Hypothesized Causes

(Male)

Causes	Direct Effects	Total Indirect Effects	Total Hypothesized Effects
Mother's Educational Expectations			
Student SES	.25		.25
Academic Achievement	.47		.47
Self-Esteem			
Student SES	.04	-.03	.01
Academic Achievement	-.09	-.07	-.16
Mother's Educational Expectations	-.14		-.14
Educational Plans			
Percentage Going to College	.04		.04
Student SES	.04	.15	.19
Mother's Educational Expectations	.62	.00	.62
Self-Esteem	-.03		-.03
Academic Achievement	.13	.30	.43
Teacher's Educational Level	-.02		-.02
Counselor's Influence	-.03	.10	.07
Percentage Going to College			
Counselor's Influence	.06		.06
School SES Level	.56		.56

Table 21

Model I

Direct and Indirect Effects on Dependent Variables by Hypothesized Causes

(Female)

Causes	Direct Effects	Total Indirect Effects	Total Hypothesized Effects
Mother's Educational Expectations			
Student SES	.27		.27
Academic Achievement	.41		.41
Self-Esteem			
Student SES	.02	-.04	-.02
Academic Achievement	-.11	-.07	-.18
Mother's Educational Expectations	-.16		-.16
Educational Plans			
Percentage Going to College	-.04		-.04
Student SES	.07	.17	.24
Mother's Educational Expectations	.64	.00	.64
Self-Esteem	-.03		-.03
Academic Achievement	.09	.27	.36
Teacher's Educational Level	.02		.02
Counselor's Influence	.02	-.00	.02
Percentage Going to College			
Counselor's Influence	.05		.05
School SES Level	.58		.58

Structural Model II

Structural Model II is presented in Figure 2. The reader will note that the basic constructs (unmeasured variables) remain the same. However, two new variables, Participation in Athletics and Self-Concept (Y_5) have been added, while Level of Educational Plans has been replaced by the dichotomous item indicating whether or not the student plans to attend a four-year college full time. A measure of Educational Motivation (an item having to do with the amount of time spent doing homework) was included in the model, while Teacher's Educational Level was removed.

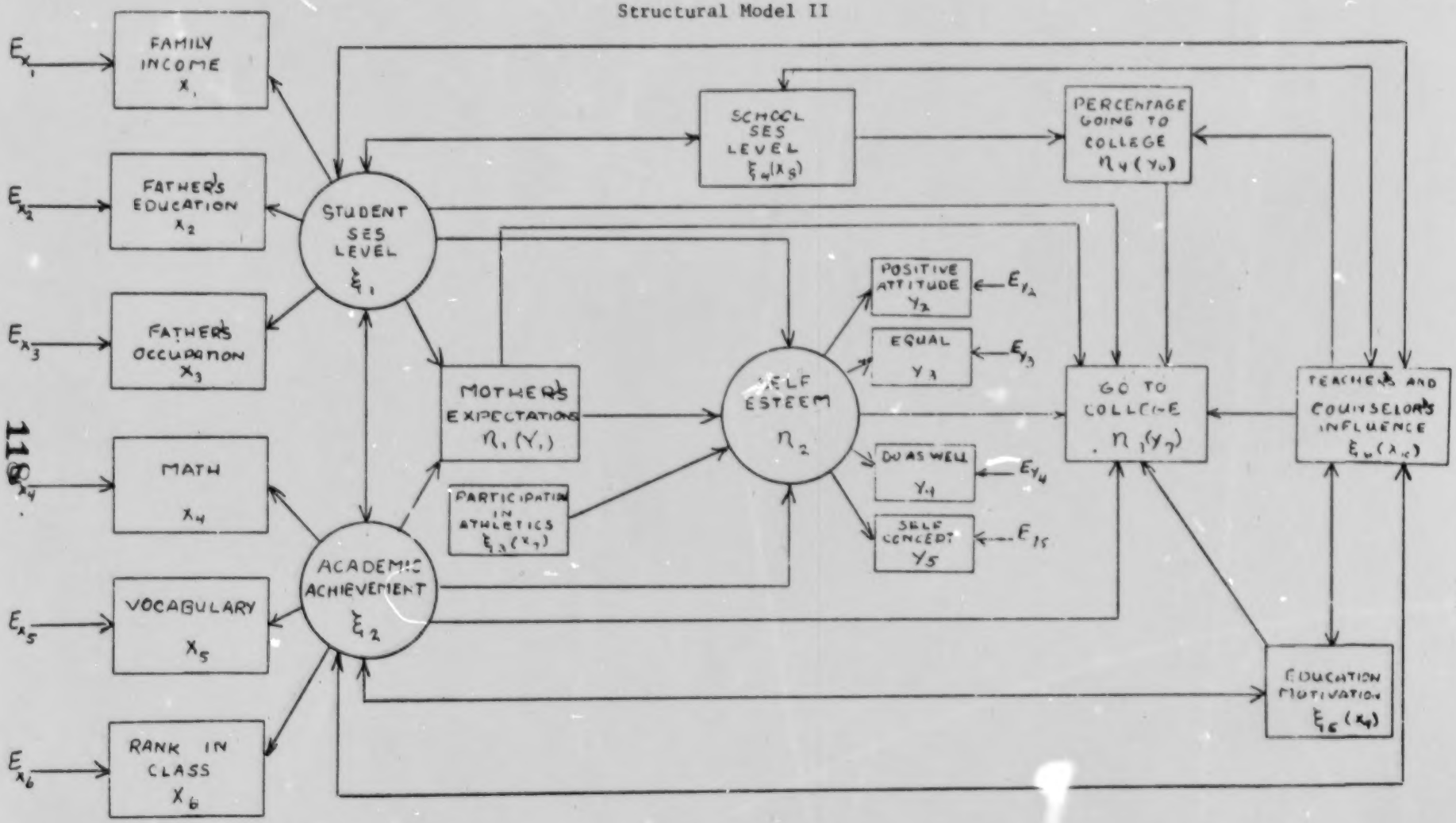
Participation in Athletics was added to Self-Esteem's causal network in an effort to reduce the unexplained variance in Self-Esteem. That variable had also been considered instrumental in explaining college-going aspirations in Boyle's (1966) study. In an effort to achieve better measurement of the Self-Esteem construct itself, a fourth observed indicator, Self-Concept (Y_5), was added. It is felt that the greater the overidentification of any given construct, the greater the reduction in errors of measurement. However, the use of observed indicators for the purpose of overidentification must, of course, be consistent with substantive theory.

Self-Concept, the fourth observed indicator, is an item in which the respondent indicates whether or not he feels he would have the ability to succeed in college, regardless of whether or not he intends to go. This indicator might be more appropriately referred to as Academic Self-Esteem.

The replacement of Level of Educational Plans with the dichotomous Four-Year College "Go-No-Go" measure was based on both statistical and rational reasons. Past studies have yielded evidence that SES scales,

Figure 2

Structural Model II



and possibly scales such as Level of Educational Plans, may not be truly interval scales (Boyle, 1966; Michael, 1961; Smith, 1972; Wilson, 1959). Where assumptions of interval scales are not met, we would expect linear estimators, such as product moment correlations, to underestimate the true relationship. It is felt, however, that when one uses multiple observed measures, as in the case of Student SES, with rescaling in terms of the best observed indicator (as was done in this case), the assumptions of the interval scale are more likely to be met. Since only a single observed measure of both School SES and Level of Educational Plans was used in Model I, it was felt that some of the relationships describing the causal network underlying Level of Educational Plans might be attenuated. When observed correlations between Level of Educational Plans and indicators of SES and Academic Achievement were compared to the corresponding correlations with the dichotomous (College Go-No-Go), they gave support to the contention that some attenuation was taking place. It would appear that most of the attenuation arises from the fact that those individuals who plan to attend junior colleges and/or post-high school vocational training are poorly differentiated (with respect to Academic Achievement or SES) from those individuals who go to work full time, yet there is considerable differentiation between those planning to attend a four-year college and the remaining sample.

In addition to the above statistical reasons for using the dichotomy, there has been extensive sociological literature in the field (Bain & Anderson, 1974; Boyle, 1966; Duncan, Haller, & Portes, 1968; Michael, 1961; Sewell & Armer, 1966; Turner, 1964) which deals with studies of the relative effects of high school social class composition on

college-going plans of students. In many of these studies, an individual's social class is controlled for, while in a somewhat smaller number aptitude and/or achievement, as well as individual social class, are controlled for when assessing the effects of school social class composition on college-going. Model II closely parallels the latter studies.

Bain and Anderson (1974), in their review of the literature in this area, conclude that there is at least some degree of positive relationship between school social class composition and the college plans of students. They suggest, however, that there is some question concerning the relationship and validity of both SES and college-going plans. The use of the LISREL structural solution using unmeasured variables will hopefully remove some of the "noise" from the system which may be making some important relationship such as the effects of school social class composition on college-going plans. Duncan, Haller, and Portes (1968) suggest that the relationship between school social class composition and college-going plans of a given social class can be explained more in terms of peer (i.e., best friend, etc.) influence rather than in terms of school social class-related differences. This point will be treated further on in the discussion of the results.

A technical point is in order here. Since a dichotomous variable (College Go-No-Go) is being used as a primary dependent variable, the input to the LISREL program was a correlation matrix rather than a variance-covariance matrix. The reason for using the correlation matrix, rather than the variance-covariance matrix, is that the variance of the dichotomous variable is extremely small compared to the others in the system and, when minimizing across a whole surface, the larger variance

variables will be given undue weight in the fitting. Since the variances of these variables are, in fact, arbitrary, it seems reasonable to give them equal weight as in the case of a correlation matrix. The only drawback to this approach is the appropriateness of the statistical tests for the overall goodness of fit. However, statistical tests, considering the present large sample sizes, are relatively meaningless and the primary goal here is one of estimation.

(a) Black and White Sample Comparisons: Model II. Inspection of Figures 2a and 2b, showing the Black and White Model II results, indicates that many of the differences as well as similarities in the causal network for the two races remains, with some interesting exceptions. For example, the importance of Level of Academic Achievement with respect to both College-Going and Self-Esteem are dramatically increased, both proportionately and in absolute size, for Blacks wherever the effect occurs and to a lesser extent for Whites. In fact, when it comes to attending a four-year college full time, Level of Academic Achievement becomes more important for Blacks than for Whites (Black path coefficient = .40; White = .30). With respect to direct effects on Self-Esteem, Level of Academic Achievement is more than three times as important as Mother's Educational Expectations for Blacks (Academic Achievement coefficient = -.28; Mother's Educational Expectations = -.08).[1] The comparable figures for Whites are, of course, .24 and .12, indicating that Level of Academic

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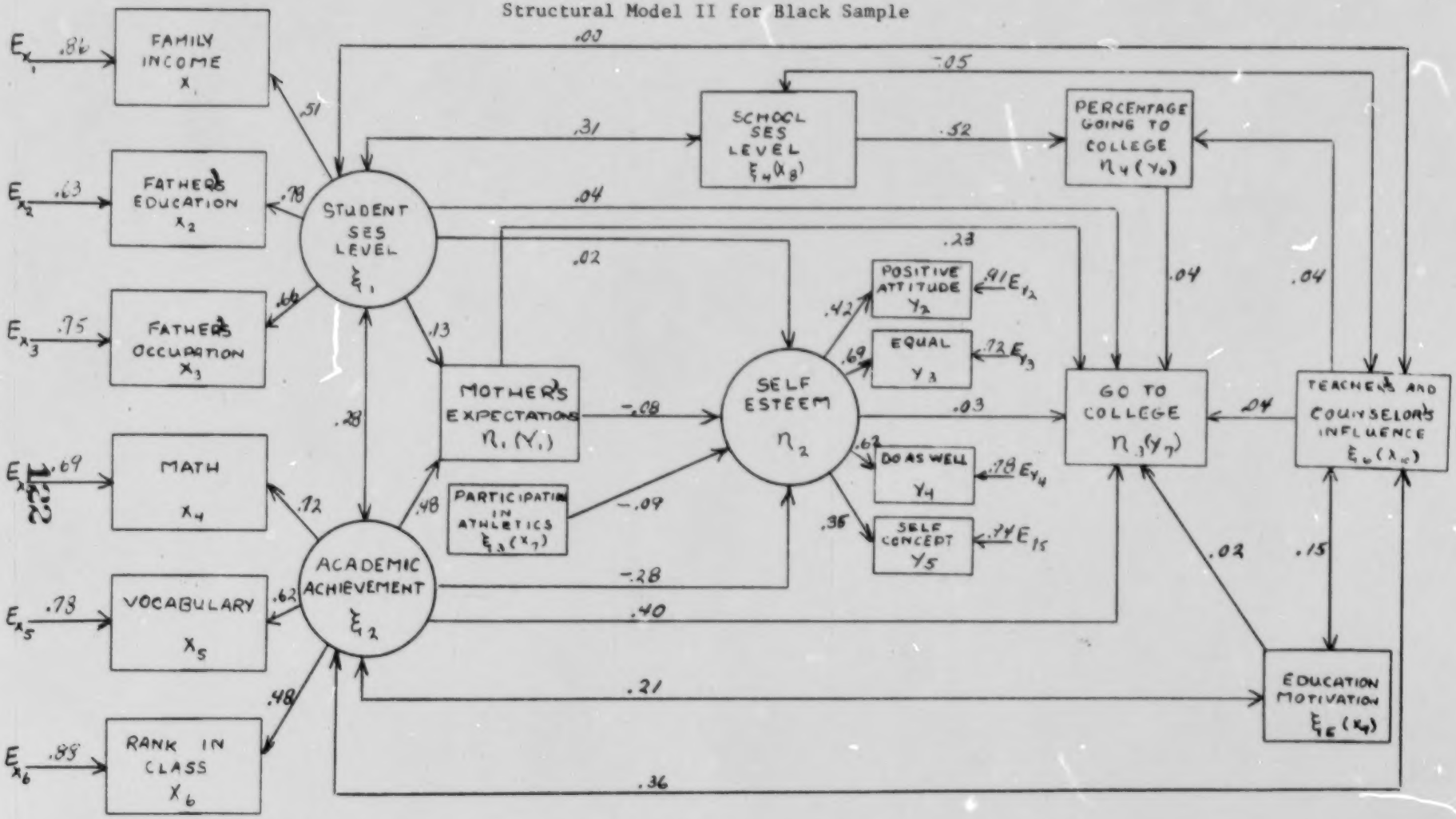
[1] Negative signs for Self-Esteem reflect scale direction only and are interpreted as positive effect.

Figure 2a

Structural Model II for Black Sample

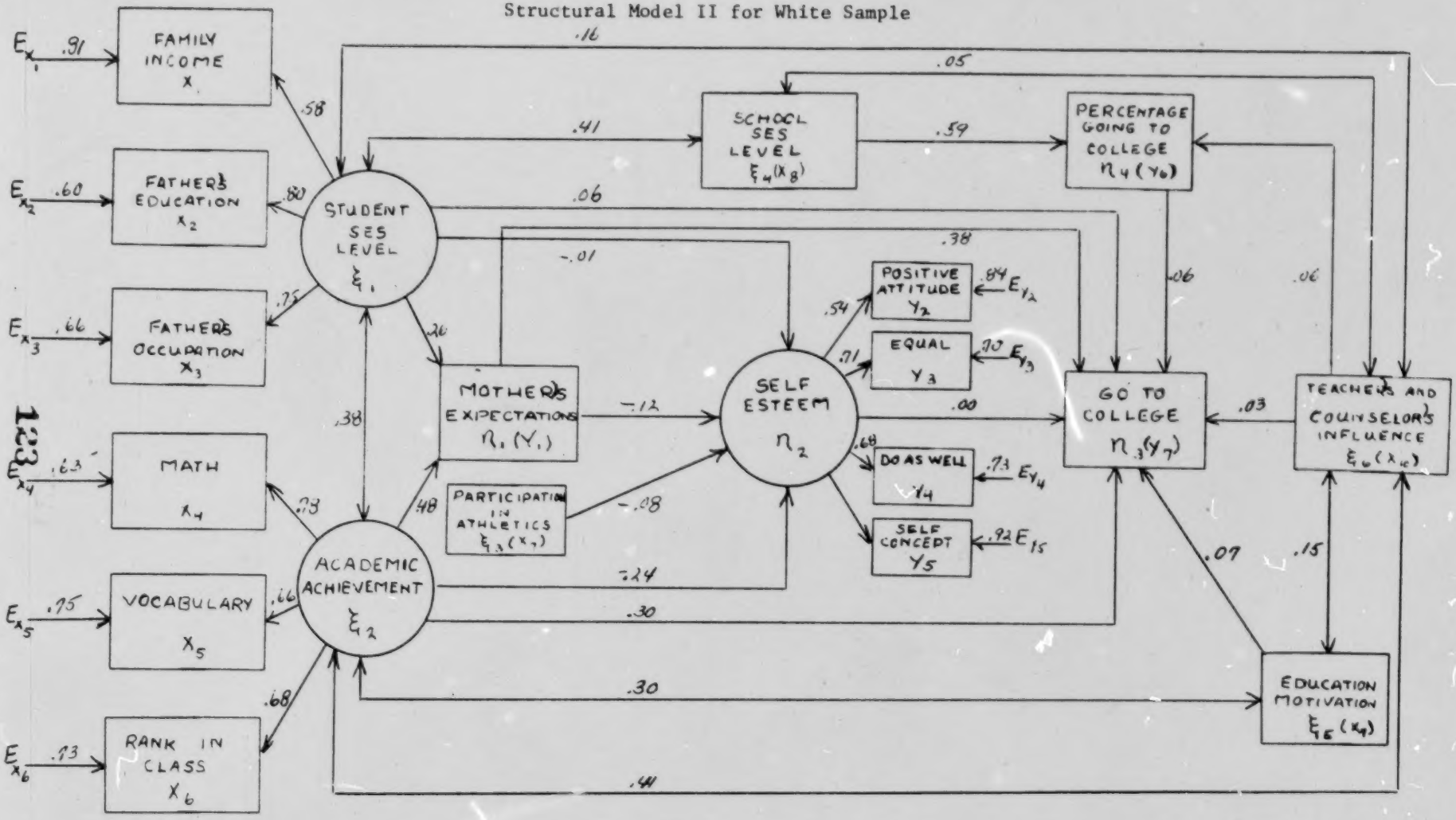


Multiple Correlation

$$\begin{cases} R_{\eta_1 \xi_1 \xi_2} = .53 \\ R_{\eta_2 \eta_1 \xi_1 \xi_2 \xi_3} = .34 \\ R_{\eta_3 \eta_1 \eta_2 \eta_4 \xi_1 \xi_2 \xi_5 \xi_6} = .54 \\ R_{\eta_4 \xi_1 \xi_6} = .52 \end{cases}$$

Figure 2b

Structural Model II for White Sample



Multiple Correlation

$$\begin{cases} R_{\eta_1 \xi_1 \xi_2} = .63 \\ R_{\eta_2 \eta_1 \xi_1 \xi_2 \xi_3} = .35 \\ R_{\eta_3 \eta_1 \eta_2 \eta_4 \xi_1 \xi_2 \xi_5 \xi_6} = .68 \\ R_{\eta_4 \xi_4 \xi_6} = .60 \end{cases}$$

Achievement is only twice as important for them as Mother's Educational Expectations in determining one's Self-Esteem. It appears that the jump in importance of Level of Academic Achievement--although real enough--only surfaces if indicators (of Self-Esteem) are included which force the individual to rate himself on his ability to perform academic tasks, as was done in the Self-Concept (Y_5) item. The four loadings on Self-Esteem for both Blacks and Whites assume somewhat the same pattern but the level and variations within loadings suggest that Self-Esteem is a complex phenomenon with an underlying general factor but also with many possible unique factors. That is, for both racial groups, the common core of positive loadings suggests a general factor, yet there is considerable unique variance left over as compared to SES or Academic Achievement.

The reader should also inspect and compare Figures 1a and 2a, and 1b and 2b, noting the stability of the pattern of loadings is maintained when the fourth indicator of Self-Concept is added. Of particular interest within this stable pattern is the general tendency of the Blacks as compared with the Whites to be inconsistent in both their feelings of being equal and having a positive attitude toward themselves. This phenomenon is reflected in the greater disparity proportionately between the loadings for positive attitude toward oneself and feeling equal to others for Blacks. This greater disparity for Blacks might be related to the "big frog in the little pond" phenomenon as espoused by Davis (1966) and Meyer (1970). That is, for Blacks who attend schools where many of the students are of the same social class (e.g., an inner-city school), there is likely to be more consistency concerning his feelings of superiority-inferiority and equality. However, if Blacks

attend a middle-class or upper-middle-class predominantly White school, his feelings about his self-perceived abilities and resources may not always be consistent with his feelings of social equality.

Returning to the determinants of Self-Esteem, it should be noted that SES has essentially no effect for Blacks, and a relatively trivial total effect for Whites (see Tables 22 and 23).

It is often accepted as a basic that the college-going population is held in high esteem. Yet the results of all four samples--Blacks, Whites, Males, and Females--seem to indicate a surprisingly small relationship between the construct Self-Esteem and Level of Educational Plans or College-Going Plans. The zero-order correlations ran from a low of .14 for Blacks to a high of .23 for Whites. Whether this is a recent development or simply another indicator of complexity of structure of a person's self-esteem is not known, but it does seem that post-high school decisions concerning alternative pursuits such as vocational training, full-time work, etc., will not be rejected by individuals on the basis of perceived self-worth.

The causal network underlying plans to go to a four-year college full time is primarily anchored by Level of Academic Achievement, particularly for Blacks. This considerable change in importance of Level of Academic Achievement for Blacks (and for Whites to a lesser extent) from Model I to Model II underscores the importance of Academic Achievement alone in decision-making with regard to attending a four-year college. To Blacks, the decision to move from high school to four-year full-time schooling has comparatively little to do with influences related to social class or Mother's Educational Expectations,

Table 22

Model II

Direct and Indirect Effects on Dependent Variables
by Hypothesized Causes

(Black)

Causes	Direct Effects	Total Indirect Effects	Total Hypothesized Effects
Mother's Educational Expectations			
Student SES	.13		.13
Academic Achievement	.48		.48
Self-Esteem			
Student SES	.02	-.01	.01
Academic Achievement	-.28	-.04	-.32
Mother's Educational Expectations	-.08		-.08
Participation in Athletics	-.09		-.09
Go to College			
School SES Level		.02	.02
Percentage Going to College	.04		.04
Student SES	.04	.03	.07
Mother's Educational Expectations	.23	-.00	.23
Self-Esteem	.03		.03
Academic Achievement	.40	.11	.52
Educational Motivation	.02		.02
Counselor's Influence	.04	.00	.04
Participation in Athletics		.00	.00
Percentage Going to College			
Counselor's Influence	.04		.04
School SES Level	.52		.52

Table 23

Model II

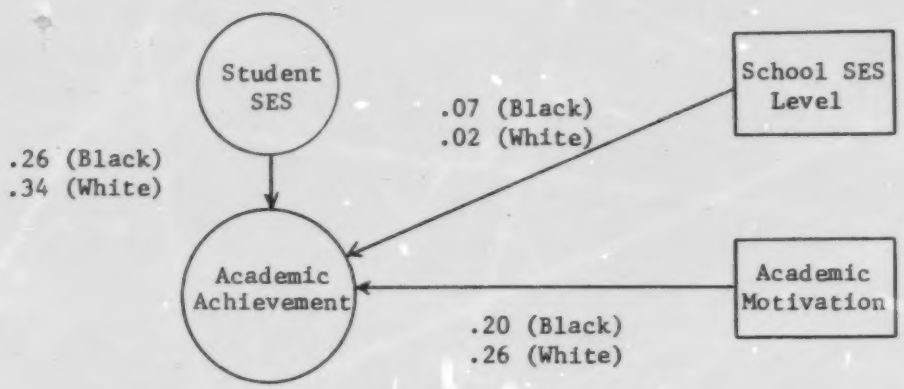
Direct and Indirect Effects on Dependent Variables
by Hypothesized Causes

(White)

Causes	Direct Effects	Total Indirect Effects	Total Hypothesized Effects
Mother's Educational Expectations			
Student SES	.26		.26
Academic Achievement	.48		.48
Self-Esteem			
Student SES	-.01	-.03	-.04
Academic Achievement	-.24	-.06	-.30
Mother's Educational Expectations	-.12		-.12
Participation in Athletics	-.08		-.08
Going to College			
School SES Level		.03	.03
Percentage Going to College	.06		.06
Student SES	.06	.10	.16
Mother's Educational Expectations	.38	.00	.38
Self-Esteem	.00		.00
Academic Achievement	.30	.18	.48
Educational Motivation	.07		.07
Counselor's Influence	.03	.00	.02
Participation in Athletics		.00	.00
Percentage Going to College			
Counselor's Influence	.06		.06
School SES Level	.59		.59

but is basically a matter of academic preparation. For Whites, although important, academic preparation (as measured by Academic Achievement) is not quite so critical and other concerns also enter into the decision. Inspection of Tables 22 and 23 indicates that for Whites, SES, Mother's Educational Expectations, and Educational Motivation still play a relatively important role in making decisions about attending a four-year college full time. Certainly SES and its carriers play a proportionately greater role for Whites than for Blacks in this decision-making process. Mother's Educational Expectations plays a significant role for both Blacks and Whites, but it is interesting to note what little effect SES has on the Black mother's decision as compared with the Whites.

It is also interesting to note the smaller relationships (Figures 2a and 2b) between Academic Achievement and Educational Motivation for Blacks (Blacks: $r = .21$; Whites: $r = .30$). If one were interested in a slightly different model (estimating the determinants of Academic Achievement), we might hypothesize the following sub-model from our larger model:



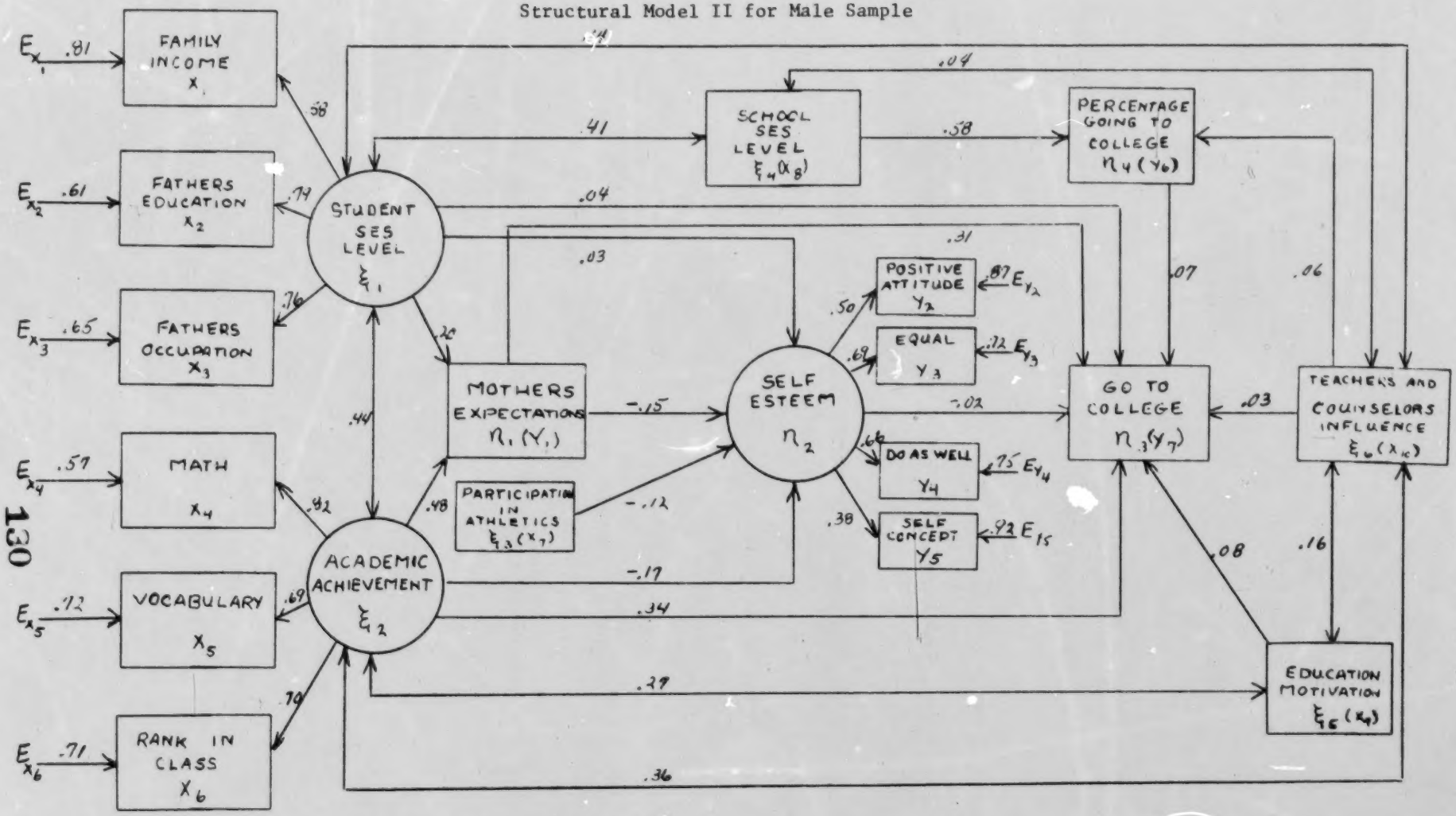
The path coefficients for Academic Motivation are changed little from their original zero-order correlations since there was little or no correlation between Academic Motivation, Student SES, and School SES. Thus, School SES Level has some effect on Black achievement, but very little for Whites. One might expect that as more and more middle-class schools are integrated, the size of this effect would tend to become proportionately larger for Blacks.

Directing our attention to the effect of School Social Class Composition on College-Going Plans, a small positive effect for Whites is found and a somewhat iesser one for the Blacks. It is likely that if we had the foresight to treat School SES Level and Percentage of Class Going to College as two observed indicators of a single error-free construct, "School Social Class Composition," the effect would be larger, approximating at least the sum of the effects for School SES Level and Percentage Going to College as shown in Tables 22 and 23. Recognizing the increased emphasis in the literature on "best friends" influence on college-going plans, another model (not shown here) incorporated responses to an item having to do with the extent of friend's influence, but it demonstrated essentially zero effects.

(b) Male and Female Samples: Model II. The results of the analysis for Model II suggest little or no differences from Model I in the pattern describing the causal networks for the two sex groups. However, there are some changes in magnitude of effects from Model I (see Figures 2c and 2d; Tables 24 and 25). As was the case with the racial groups, the incorporation of college-going plans, as a primary consequence, leads to comparatively stronger causal effects associated with Level of Academic

Figure 2c

Structural Model II for Male Sample

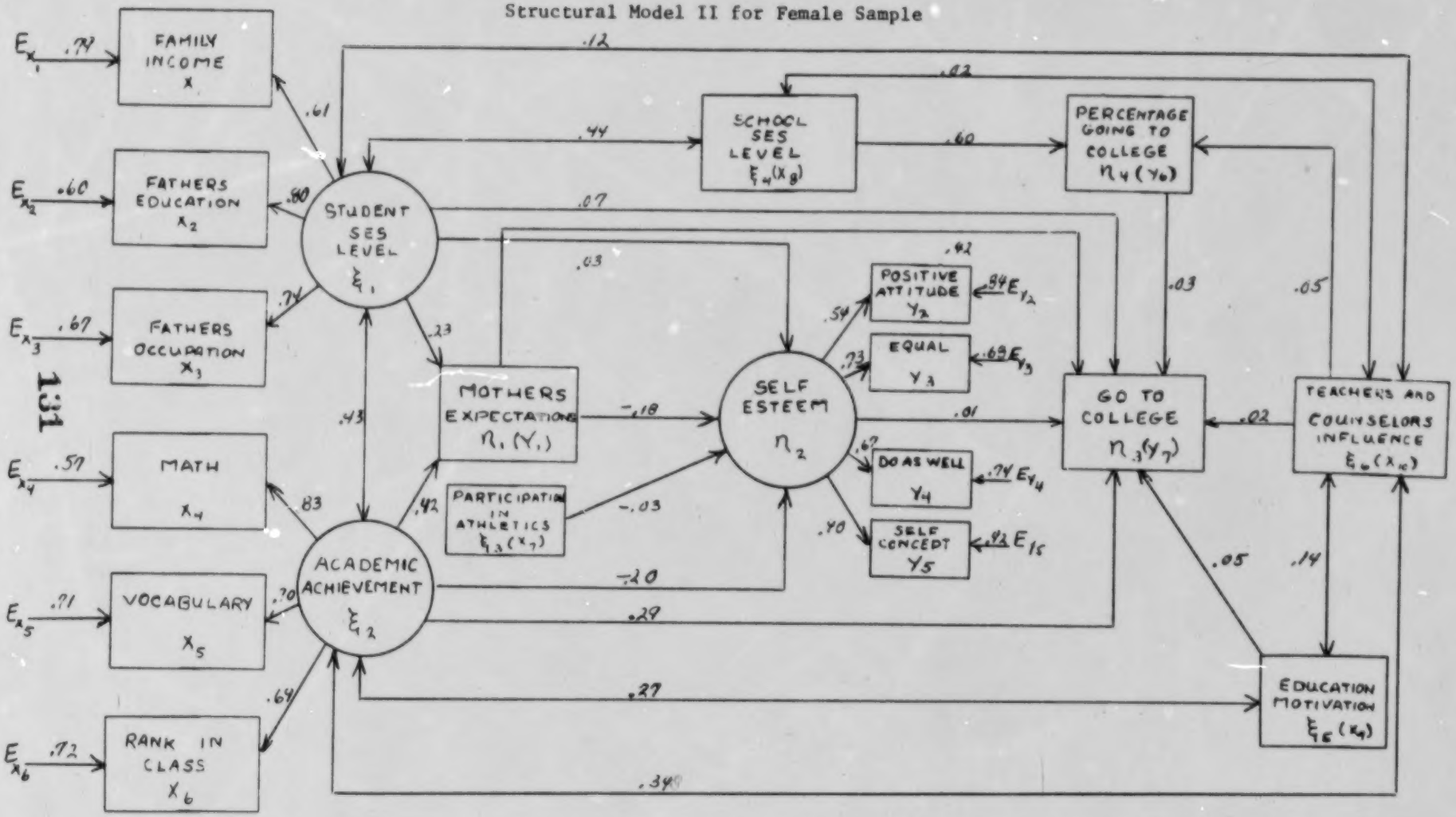


Multiple Correlation

$$\begin{cases} R_{\eta_1 \xi_1 \xi_2} = .60 \\ R_{\eta_2 \eta_1 \xi_1 \xi_2 \xi_3} = .33 \\ R_{\eta_3 \eta_1 \eta_2 \eta_4 \xi_1 \xi_2 \xi_5 \xi_6} = .65 \\ R_{\eta_4 \xi_4 \xi_6} = .58 \end{cases}$$

Figure 2d

Structural Model II for Female Sample



Multiple Correlation

$$\begin{cases} R_{\eta_1 \xi_1 \xi_2} = .56 \\ R_{\eta_2 \eta_1 \xi_1 \xi_2 \xi_3} = .33 \\ R_{\eta_3 \eta_1 \eta_2 \eta_4 \xi_1 \xi_2 \xi_5 \xi_6} = .68 \\ R_{\eta_4 \xi_4 \xi_6} = .60 \end{cases}$$

Table 24

Model II

Direct and Indirect Effects on Dependent Variables
by Hypothesized Causes

(Male)

Causes	Direct Effects	Total Indirect Effects	Total Hypothesized Effects
Mother's Educational Expectations			
Student SES	.20		.20
Academic Achievement	.48		.48
Self-Esteem			
Student SES	.03	-.03	.00
Academic Achievement	-.17	-.07	-.24
Mother's Educational Expectations	-.15		-.15
Participation in Athletics	-.12		-.12
Going to College			
School SES Level		.04	.04
Percentage Going to College	.07		.07
Student SES	.04	.06	.10
Mother's Educational Expectations	.31	.00	.31
Self-Esteem	-.02		-.02
Academic Achievement	.34	.15	.49
Educational Motivation	.08		.08
Counselor's Influence	.03	.00	.03
Participation in Athletics		.00	.00
Percentage Going to College			
Counselor's Influence	.06		.06
School SES Level	.58		.58

Table 25

Model II

Direct and Indirect Effects on Dependent Variables by Hypothesized Causes

(Female)

Causes	Direct Effects	Total Indirect Effects	Total Hypothesized Effects
Mother's Educational Expectations			
Student SES	.23		.23
Academic Achievement	.42		.42
Self-Esteem			
Student SES	.03	-.04	-.01
Academic Achievement	-.21	-.08	-.29
Mother's Educational Expectations	-.18		-.18
Participation in Athletics	-.03		-.03
Go to College			
School SES Level		.02	.02
Percentage Going to College	.03		.03
Student SES	.07	.10	.17
Mother's Educational Expectations	.42	-.00	.42
Self-Esteem	.01		.01
Academic Achievement	.29	.18	.47
Educational Motivation	.05		.05
Counselor's Influence	.02	.00	.02
Participation in Athletics		.00	.00
Percentage Going to College			
Counselor's Influence	.05		.05
School SES Level	.60		.60

Achievement. This is particularly true for males, although the relative size of the effect associated with Academic Achievement also increased for females, Mother's Educational Expectations and SES continue to be relatively strong determinants of post-high school educational plans. As one might expect, Participation in Athletics has a significant effect on Self-Esteem for males, but little or none for females. It is of some interest to note that there appears to be somewhat of a differential effect for School Social Class Composition on College-Going Plans for males and females. That is, males appear to be more affected by their classmates' plans than are females. Similar to Model I, Mother's Educational Expectations has a relatively large direct effect on College-Going Plans for females (females = .42; males = .31), but what determines Mother's Educational Expectations beyond SES and Academic Achievement is unknown. It is possible that if one used Father's Educational Expectations for males, the resulting effect might match the effect of Mother's Educational Expectations for females. However, the literature (e.g., Kandel & Lesser, 1970) suggests that the one best indicator of parental aspirations is the mother's aspiration. A finding that is clear from the results of both Model I and Model II is that the major difference between males and females lies in the extent to which a larger portion of the female variation in post-high school educational plans is determined by variables other than academic achievement.

Use of Causal Models in Policy-Making Decisions

The question arises as to how the policy-maker can effectively use the above results for making policy decisions. For example, he might

ask the following specific question: "What changes in the environmental structure can be made which are likely to increase the number of Blacks entering post-high school vocational training?" To arrive at an answer to this question, it is necessary to turn to Model I, where the primary dependent variable is a six-point continuous scale describing educational plans in which post-high school vocational training is one scale point above high school graduation. By feeding the Black students' scores into the regression equation based on Model I, it is found that their average predicted scale value is, on the average, at the scale value representing completion of high school (i.e., one point below the desired scale level). The salient determinants (both direct and indirect) of Level of Educational Plans are then reviewed, dividing them into those that are easily manipulatable and those that are relatively unchangeable over reasonable time periods. For example, although SES does have a significant effect on Educational Plans, it is a relatively intractable variable. The policy-maker might then consider Academic Achievement, Mother's Educational Expectations, or Teacher's Educational Level as possible variables to be manipulated in order to bring about the desired increase in their predicted scale level score. Thus, the choice, at this point, may not be determined solely on the basis of which of the manipulatable variables has the largest effect (path coefficient), but on the basis of their being cheaper and easier to manipulate, despite their smaller effect.

To be more specific in our example, let's say the decision-maker wishes to manipulate the Black students' Academic Achievement scores. He finds, using the raw score path coefficient for Academic Achievement,

that the Blacks' scores on Academic Achievement have to go up eight points to bring about the required one scale point increase in the Educational Plans scale. He might then seek to raise the Blacks' achievement scores eight points. Turning to the sub-model describing the determinants of Black achievement in Model I, he notes that Teacher's Educational Level is a strong determinant of Black achievement and, using the raw score path coefficient associated with Teacher's Educational Level, he finds that to raise the Black achievement scores eight points it is necessary to increase the proportion of teachers with a masters degree from 30 percent to 40 percent. The policy-maker may decide that implementing this policy would be too expensive. He then notes that Mother's Educational Expectations has a relatively large effect on student Educational Plans, and he also finds that if he raises achievement scores three points, Mother's Educational Expectations are raised sufficiently to bring about the scale interval desired increase. The attempt to achieve the effect in that particular way would, however, be a very unlikely approach unless the indirect effect of Academic Achievement (through Mother's Educational Expectations) was larger than its direct effects on Educational Plans, which was not the case in Model I.

Although the above is an oversimplification, it represents the appropriate direction to follow when the data collection instruments are specifically designed to collect information which is applicable in both content and format for causal modeling. However, serious difficulty was encountered for that reason when attempting to build a causal model for occupational or training intentions because the most relevant determinants (e.g., high school curriculum) tend to be of a categorical nature and thus

not amenable to conventional path models which assume continuous scales. Furthermore, for such important potential determinants as teacher, peer, and parental expectations with respect to vocational outcomes, the information was simply not available and without it the causal analysis would be restricted to a very limited model. As a result, the usual descriptive cross-classification and ANOVA techniques as applied in Section I of this report were more appropriate for understanding the occupational aspects of plans and aspirations.

This is not to say that vocationally-relevant items cannot be written in a continuous form (that is, having an underlying scale). For example, we can rank vocational choices as to whether they are unskilled, semi-skilled, and skilled, but we then need to ask the parents to rank vocational choices according to what they would prefer for their son or daughter. We could then ask the respondent to indicate the vocational choice of his best friend. All of these responses could be scaled on an unskilled, semi-skilled, and skilled basis and we would then have the necessary continuous scales describing peer and parent influence on vocational choice. These continuous measures could then be incorporated in a viable path model. Future design of questionnaire items in a longitudinal study should take into account the addition of a variety of appropriate vocationally-oriented scales for possible path model uses.

CONCLUSIONS

This assessment of the views of high school students, regarding their educational and vocational future, has sought to improve the understanding of how personal, social and educational influences might act to shape post-high school decisions. In an attempt to explain the complex role of a variety of family, personal, peer and school characteristics, different analytical approaches were found to be applicable as a function of the particular questions being posed and the nature of the available information. Thus, with essentially descriptive, univariate analyses it was deemed important, initially, to define specific educational and vocational objectives perceived by the student, the relative value or priority that he assigns to each, how he claims to arrive at those decisions, and how he is likely to apply them in shaping his post-high school strivings. Prior evidence of the importance of sex differences in this regard and a serious research gap in knowledge of the extent to which curriculum group membership is reflected in the formulation of plans and aspirations--coupled with a strong assumption that curriculum differentiation and sex interact with one another--served to define the focus of the descriptive contrasts for the first section of the report.

From the results obtained it was apparent that aspirations and plans of males and females in differing curriculum subgroups (Academic, General, Vocational) conform to logically expected response patterns that are commensurate with their educational and social backgrounds and the expectations that those backgrounds would be likely to impose. The overall pattern is one of the Academic student fitting an expected "mold," in his

intentions and desires for the highest levels of educational and occupational attainment, compared to members of the other curriculum groups; while General curriculum students strive for comparatively higher levels than those enrolled in the Vocational curriculum. In essence, the Academic group is comprised of the college-goers who arrive at that choice earlier, and who also hope for and expect the higher status, higher paying (i.e., professional-managerial) occupational positions. The level of educational aspirations that Academic students hold for themselves are also much closer to their level of educational plans or intentions than those of their counterparts--a result that might be said to represent a greater degree of "reality" in matching future wishes to expected accomplishment. Interestingly, however, in the perceptions of their occupational future, the match in planning and aspirational levels is closer for the Vocational curriculum students who, despite seeing themselves in lower social status occupations after high school, tend, nevertheless, to hold job desires that are more in line with job expectations than those in the other curriculum programs.

In describing how they arrive at their educational and vocational decisions, students indicate that their own initiative serves as the primary basis for shaping those plans and aspirations, while parents and friends constitute the dominant external sources of such influence (in that order) and school personnel rank far behind in any perceived impact. Academic curriculum students and females are the ones who trust more to their own initiative and to those other-person, or external, sources. Such self-report findings at a descriptive level can be seen

as reasonably supportive of conclusions drawn, inferentially, from correlational studies that have indicated a more central role for parents and peers than for the school or its personnel. In the case of peers, that influence might be said to stem from the students' having friends whose dominant post-high school plans they perceive as largely similar to their own.

Specific types of future activities that students see for themselves and their reasons for these decisions reflect some of the sharpest sex and curriculum distinctions found. One such striking result is in the much greater stress that Academic students place on the loftier "meaning" of any work they might seek, in the form of its importance and interest as well as its creative and socially beneficial character. By contrast, nonacademic students stress the more "mundane" or immediately tangible benefits of a friendly and sociable work environment, steadiness of work and an opportunity to make money. But, whatever their curriculum group membership, they all tend to agree on the primacy of job success in their lives and in wanting decision-making freedom in the jobs that they do finally obtain. Females, as might be expected, show greater social orientation than males in viewing the work environment (e.g., jobs with greater social utility and the opportunity to help people are important) and in their longer-term lifetime ambitions which emphasize marriage and family as opposed to male emphases on occupational success and security. Males are also less discrepant in their level of occupational aspirations and plans, whereas females plan for comparatively lower occupational status positions than they aspire to.

Within those general findings, however, there were a number of sex by curriculum interaction effects that served as important qualifiers to the overall conclusions. For example, the greater importance placed on marriage and family by females is derived almost entirely from those enrolled in the General and Vocational curricula rather than from Academically enrolled females. Similarly, the sharpest difference between males and females, with regard to the occupational aspirations and plans discrepancy, occurs for the Academic group with Academic females most discrepant in this respect (i.e., likely to wish for higher status jobs than they plan to obtain).

Attempts to define variables that might influence levels of student plans and aspirations on an inferential basis were dependent on interpretation of zero-order r's between background and personal characteristics and on path models used to estimate the strength and relative importance of such variables within an hypothesized causal structure. Magnitudes of zero-order r's tend to complement prior research findings, in that family characteristics bore modest relationships (r's of .20's to low .30's) to level of plans and aspirations as did measures of school characteristics and student academic achievement, while cognitive skills (i.e., math and verbal) tend to show more substantial r's in the .30's to low .40's. Student expressions of parental educational expectation which produced some of the highest zero-order correlations, also showed a particularly wide range of values from the high .30's to low .70's. As with all of the sets of independent variables, the variation proved to be very much a function of sex and whether the dependent variable

consisted of level of aspiration or plans and whether it was one that entailed a decision in the vocational or educational area. Thus, it is necessary to go beyond Brookover's general conclusion (Brookover, et al., 1967) that the educational plans and aspirations distinction is important--since each results in different relationships with SES and academic achievement (as confirmed here)--and to point out that, in addition, there are differences found in patterns of correlates when the contrast is between level of educational and occupational decisions and when these are applied to male and female samples.

In order to add more precise understanding to the inferential conclusions that can be drawn from zero-order r's the use of path analytic models providing estimates of complex causal effects was required. With racial contrasts introduced (i.e., Blacks vs. Whites), retention of separate analyses by sex and a focus on the most widely studied aspect of student decision making--i.e., decisions regarding educational intentions--it was found that, although the overall causal structures for the races and sexes are grossly similar, there remain differences in the degree to which causal mechanisms operate that can have important implications for educational policy decisions.

Findings based on solutions generated from the hypothetical causal equations were basically of two kinds, those which apply to all populations (Blacks and Whites, males and females) and those which suggest differential effects which are unique to populations. Considering the overall effects first, and taking each important dependent variable separately, it was found that: (a) Mother's Educational Expectations was

a variable fairly well explained by socioeconomic class membership and academic achievement of the son or daughter (multiple correlations range from a low of .55 to a high of .65). For all populations, however, Academic Achievement of the son or daughter was considerably more important than SES in determining the Mother's Educational Expectations for the child. (b) Student Self-Esteem appeared to be a complex construct which was relatively poorly explained by the hypothesized determinants (multiple correlations in the low.30's). Two explanatory variables which did seem to have some effect on an individual's self-esteem were the individual's Academic Achievement and Mother's Educational Expectations. Surprisingly enough, the one variable which did not have a significant direct or indirect effect on an individual's self-esteem was his socioeconomic class membership. It would seem that an individual is more likely to base his personal self-concept on his mother's perceptions (in this case, her expectations of his or her academic achievement) and his own knowledge of his academic ability than on his social class membership. Certainly a mother's perception of her son's or daughter's ability to climb the educational ladder should not be tied to a particular social class membership. Thus, it should not be surprising to expect an individual's self-perception to be more directly a function of how "important others" perceive him (e.g., mother) rather than on status symbols based on group membership such as social-class. One other interesting finding with respect to self-esteem that was relatively consistent across populations was the fact that an individual's perception of whether or not he was "just as good as his peers" had a relatively

low relationship with self-reports of whether or not he was personally satisfied with himself or herself. This result points up the factorial complexity of Self-Esteem and suggests the need for additional explanatory variables in the model. (c) Level of Educational Plans, whether defined on a continuous scale (Model I) or dichotomously ("college go-no-go," Model II), appeared to be relatively well explained by the hypothesized model (multiple correlations range from a low of .57 to a high of .76 for Model I). However, the relative importance of the determinants differed according to whether the continuous scale for Level of Educational Plans was used or whether the "college go-no-go" criterion was used. In Model I, the three significant explanatory variables in order of importance were Mother's Educational Expectations, Academic Achievement, and Socioeconomic Status. In Model II, where the primary dependent variable was "college go-no-go," the order of importance became Academic Achievement, Mother's Educational Expectations, and Socioeconomic Status. Obviously, the two criteria do not mean quite the same thing. The continuous scale, of course, includes post-high school vocational-technical training programs as options, which are less dependent upon academic ability than attendance at a four-year college. Thus, regardless of population, if one holds Academic Ability constant, by far the biggest determinant of whether or not an individual enters post-high school vocational training programs is his or her mother's expectations. Conversely, if one plans to attend a four-year college full time, past academic achievement is by far the most important determinant. However, regardless of which of the two criteria is being used, SES proves to be

a significant but far less important determinant than the remaining two. Also, the effects of SES are primarily indirect (i.e., mediated by Mother's Educational Expectations) rather than direct. Thus, the indirect effects of SES become proportionately more important for the scaled criterion, Level of Educational Plans, where scale levels (e.g., post-high school vocational training) are not so dependent on academic ability.

When differential effects were analyzed by population, it was found that with few exceptions, the difference across populations reflected differences in magnitude rather than in kind. Although the differential effects tended to be consistent across both Model I and Model II, they were accentuated in Model II. For example, the importance of Level of Academic Achievement as a determinant of both college-going and Self-Esteem was significantly increased for Blacks and, to a lesser extent, for Whites. This considerable change in the importance of level of Academic Achievement for Blacks (and for Whites, to a lesser extent) from Model I to Model II underscores the importance of Academic Achievement in decision-making with regard to attending a four-year college full time. For Blacks, the decision to move from high school to four-year full-time schooling had comparatively little to do with influences related to social class or Mother's Educational Expectations, but was basically a matter of academic preparation. For Whites, academic preparation, although important, was not as critical and other concerns enter into the decision. Socioeconomic status, Mother's Educational Expectations, and Academic Motivation still played a proportionately greater role in decision-making for Whites than for Blacks.

One important difference between Blacks and Whites was the differential effect of Teacher Educational Level on academic performance. That is, Teacher Educational Level demonstrated a far stronger relationship with Black academic performance than it did for Whites, indicating the potential value of improving the quality of the teachers where Black students are involved. Somewhat related to this finding was the fact that school SES level had a differentially larger effect on Black achievement. One might expect that as more and more middle-class schools are integrated, the size of this effect could become proportionally larger for Blacks.

Male-female differences were relatively small, yet there was a consistent tendency for post-high school decisions to be more a function of Mother's Educational Expectations and social class considerations for females than for males. Conversely, males' post-high school decision-making was more heavily weighted by Academic Achievement. In short, it is fairly clear, from both Models I and II, that the major difference between males and females lies in the extent to which a larger portion of the female variation in post-high school educational plans is determined by variables other than academic achievement.

All of the conclusions drawn from this study bear only on the somewhat limited possibilities offered with one sample, collected within a relatively short time period and dependent on measures of student concurrent and prior experiences. Potential predictive effects of the intervening plans and aspiration measures examined here, and ways in which these serve to mediate a broad spectrum of later capabilities,

remain to be verified and more fully clarified. The primary value of the present results lies in their having pointed up the types of variables and relevant issues, or questions, worth more definitive examination with data being made available from continuing efforts in the National Longitudinal Study. Such examination would make it possible to broaden the base of information and refine the explanatory structure of educational and career decisions made by high school students.

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APPENDIX A

Student Questionnaire Items
Dealing with Plans and Aspirations

For All Students

2. Which of the following best describes your present high school program?

(Circle one.)

- General 1
- Academic or college preparatory 2
- Vocational or technical:
  - Agricultural occupations 3
  - Business or office occupations 4
  - Distributive education 5
  - Health occupations 6
  - Home economics occupations 7
  - Trade or industrial occupations 8

3. How important was each of the following in influencing your choice of your present high school program?

(Circle one number on each line.)

	Not important	Somewhat important	Very important
Your parents	1	2	3
A relative other than your parents	1	2	3
A guidance counselor	1	2	3
A teacher other than a guidance counselor	1	2	3
The principal or assistant principal	1	2	3
Clergyman (minister, priest, rabbi, etc.)	1	2	3
An adult not mentioned above	1	2	3
Friends your own age	1	2	3
Yourself	1	2	3
I had no choice; it was the only program available at my school	1	2	3
I had no choice; I was assigned to it	1	2	3

4. How often has each of the following been used in the courses you are taking this year?

(Circle one number on each line.)

	Never	Seldom	Fairly often	Frequently
Listening to the teacher's lecture	1	2	3	4
Participating in student-centered discussions	1	2	3	4
Working on a project or in a laboratory	1	2	3	4
Writing essays, themes, poetry, or stories	1	2	3	4
Going on field trips	1	2	3	4
Having individualized instruction (small groups or one-to-one with a teacher)	1	2	3	4
Using teaching machines or computer-assisted instruction	1	2	3	4
Watching television lectures	1	2	3	4

6. **Have you ever heard of or participated in any of the following high school educational programs?**

(Circle one number on each line.)

	Never heard of this program	Have heard of this program but have not participated	Have participated in this program
Cooperative Vocational Education Program (Co-op Program)	1	2	3
High School Vocational Education Work-Study Program	1	2	3
Neighborhood Youth Corps	1	2	3
Talent Search	1	2	3
Upward Bound	1	2	3

7. **Approximately what is the average amount of time you spend on homework a week?**

(Circle one.)

No homework is ever assigned 1
I have homework but don't do it 2
Less than 5 hours a week 3
Between 5 and 10 hours a week 4
More than 10 hours a week 5

13. How often have you discussed your plans for after high school with the following people?

(Circle one number on each line.)

	Never	Seldom	Often
Your parents	1	2	3
A relative other than your parents	1	2	3
A guidance counselor	1	2	3
A teacher other than a guidance counselor	1	2	3
The principal or assistant principal	1	2	3
Clergyman (minister, priest, rabbi, etc.)	1	2	3
State employment service officer	1	2	3
An adult not mentioned above	1	2	3
Friends your own age	1	2	3

14. How much has each of the following persons influenced your plans for after high school?

(Circle one number on each line.)

	Not at all	Somewhat	A great deal
Your parents	1	2	3
A relative other than your parents	1	2	3
A guidance counselor	1	2	3
A teacher other than a guidance counselor	1	2	3
The principal or assistant principal	1	2	3
Clergyman (minister, priest, rabbi, etc.)	1	2	3
State employment service officer	1	2	3
An adult not mentioned above	1	2	3
Friends your own age	1	2	3
Yourself	1	2	3

15. Have your teachers or counselors ever tried to influence your plans for after high school?

(Circle one number on each line.)

	Discouraged me	Didn't try to influence me	Encouraged me
To go to college	1	2	3
To go to vocational, technical, business, or trade school	1	2	3
To enter an apprenticeship or on-the-job training program	1	2	3
To enter the military service	1	2	3
To get a job immediately after high school	1	2	3

16. What do most of your close friends plan to do next year? (Circle one.)

- Enter the military service 1
- Go to vocational, technical, business, or trade schools 2
- Become full-time homemakers 3
- Go to college 4
- Enter apprenticeships or on-the-job training programs 5
- Go to work full-time 6
- I don't know 7
- Other 8

20. How important is each of the following to you in your life? (Circle one number on each line.)

	Not important	Somewhat important	Very important
Being successful in my line of work	1	2	3
Finding the right person to marry and having a happy family life	1	2	3
Having lots of money	1	2	3
Having strong friendships	1	2	3
Being able to find steady work	1	2	3
Being a leader in my community	1	2	3
Being able to give my children better opportunities than I've had	1	2	3
Living close to parents and relatives	1	2	3
Getting away from this area of the country	1	2	3
Working to correct social and economic inequalities	1	2	3

21. How do you feel about each of the following statements? (Circle one number on each line.)

	Agree strongly	Agree	Disagree	Disagree strongly	No opinion
I take a positive attitude toward myself	1	2	3	4	5
Good luck is more important than hard work for success	1	2	3	4	5
I feel I am a person of worth, on an equal plane with others	1	2	3	4	5
I am able to do things as well as most other people	1	2	3	4	5
Every time I try to get ahead, something or somebody stops me	1	2	3	4	5
Planning only makes a person unhappy since plans hardly ever work out anyway	1	2	3	4	5
People who accept their condition in life are happier than those who try to change things	1	2	3	4	5
On the whole, I'm satisfied with myself	1	2	3	4	5

24. How important is each of the following to you in selecting a job or career?

(Circle one number on each line.)

	Not important	Somewhat important	Very important
Making a lot of money	1	2	3
Opportunities to be original and creative	1	2	3
Opportunities to be helpful to others or useful to society	1	2	3
Avoiding a high-pressure job that takes too much out of you	1	2	3
Living and working in the world of ideas	1	2	3
Freedom from supervision in my work	1	2	3
Opportunities for moderate but steady progress rather than the chance of extreme success or failure	1	2	3
The chance to be a leader	1	2	3
Opportunities to work with people rather than things	1	2	3
Having a position that is looked up to by others	1	2	3

25. In the column under YOU, circle the one number that goes with the best description of the kind of work you would like to do. Under FATHER, circle the one number that best describes the work done by your father (or male guardian). Under MOTHER, circle the one number that best describes the work done by your mother (or female guardian). The exact job may not be listed but circle the one that comes closest. If either of your parents is out of work, disabled, retired, or deceased, mark the kind of work that he or she used to do.

(Circle one number in each column.)

	You	Father	Mother
CLERICAL such as bank teller, bookkeeper, secretary, typist, mail carrier, ticket agent	01	01	01
CRAFTSMAN such as baker, automobile mechanic, machinist, painter, plumber, telephone installer, carpenter	02	02	02
FARMER, FARM MANAGER	03	03	03
HOMEMAKER OR HOUSEWIFE	04	04	04
LABORER such as construction worker, car washer, sanitary worker, farm laborer	05	05	05
MANAGER, ADMINISTRATOR such as sales manager, office manager, school administrator, buyer, restaurant manager, government official	06	06	06
MILITARY such as career officer, enlisted man or woman in the armed forces	07	07	07
OPERATIVE such as meat cutter; assembler; machine operator; welder; taxicab, bus, or truck driver; gas station attendant	08	08	08
PROFESSIONAL such as accountant, artist, clergyman, dentist, physician, registered nurse, engineer, lawyer, librarian, teacher, writer, scientist, social worker, actor, actress	09	09	09
PROPRIETOR OR OWNER such as owner of a small business, contractor, restaurant owner	10	10	10
PROTECTIVE SERVICE such as detective, policeman or guard, sheriff, fireman	11	11	11
SALES such as salesman, sales clerk, advertising or insurance agent, real estate broker	12	12	12
SERVICE such as barber, beautician, practical nurse, private household worker, janitor, waiter	13	13	13
TECHNICAL such as draftsman, medical or dental technician, computer programmer	14	14	14

26. How important was each of the following factors in determining the kind of work you plan to be doing for most of your life?

(Circle one number on each line.)

	Not important	Somewhat important	Very important
Previous work experience in the area	1	2	3
Relative or friend in the same line of work	1	2	3
Job openings available in the occupation	1	2	3
Work matches a hobby interest of mine	1	2	3
Good income to start or within a few years	1	2	3
Job security and permanence	1	2	3
Work that seems important and interesting to me	1	2	3
Freedom to make my own decisions	1	2	3
Opportunity for promotion and advancement in the long run	1	2	3
Meeting and working with sociable, friendly people	1	2	3

27. When did you first decide whether you would go to college or not?

(Circle one.)

I decided before the 10th grade	1
I decided in the 10th grade	2
I decided in the 11th grade	3
I decided this year	4
I'm still undecided	5

29. To answer this question, circle one number for the highest level of education you would like to attain, and also circle one for the highest level you plan to attain.

(Circle one number in each column.)

	Would like to attain	Plan to attain
Less than high school graduation	1	1
Graduate from high school but not go beyond that	2	2
Graduate from high school and then go to a vocational, technical, business, or trade school	3	3
Go to a junior college	4	4
Go to a four-year college or university	5	5
Go to a graduate or professional school *after college*	6	6

31. What is the one thing that most likely will take the largest share of your time in the year after you leave high school?

(Circle one.)

Working full-time 01

Entering an apprenticeship or on-the-job training program 02

Going into regular military service (or service academy) 03

Being a full-time homemaker 04

Taking vocational or technical courses at a trade or business school full-time or part time 05

Taking *academic courses* at a junior or community college full-time or part-time 06

Taking *technical or vocational subjects* at a junior or community college full-time or part-time 07

Attending a four-year college or university full-time or part-time 08

Working part-time, but not attending school or college 09

Other (travel, take a break, no plans) 10

For those planning to work full time during the year after they leave high school.

35. Is the work in the job you plan to get after high school the kind of work you think you will be doing for most of your life?

(Circle one.)

- Yes 1
- Yes, if I like the work 2
- Yes, if I succeed 3
- No, I expect to become a homemaker 4
- No, I expect to get further education so I can enter a different occupation 5
- No, I expect to go into military service 6
- No, I expect to change to a different type of work 7
- No, some other reason 8

36. Do you have definite plans to continue your schooling part-time while working full-time during the year after you leave high school?

(Circle one.)

- No 1
- Yes, I plan to attend a vocational, technical, trade, or business school part-time 2
- Yes, I plan to take a correspondence course leading to vocational certification 3
- Yes, I plan to attend college or university part-time 4
- Yes, I plan to take a correspondence course leading to a regular college degree 5

For those planning to enter an apprenticeship or on-the-job training program during the year after they leave high school.

39. Is the work you will train for in the apprenticeship or training program the kind of work you plan to be doing for most of your life?

(Circle one.)

Yes....1
Yes, if I like the work....2
Yes, if I succeed....3
No, I expect to become a homemaker....4
No, I expect to get further education so I can enter a different occupation....5
No, I expect to enter military service....6
No, I expect to change to a different type of work....7
No, some other reason....8

41. Do you have definite plans to continue your schooling part-time while you are in your apprenticeship or training program in the year after you leave high school?

(Circle one.)

No....1

Yes, I plan to attend a vocational, technical, trade, or business school part-time....2

Yes, I plan to take a correspondence course leading to vocational certification....3

Yes, I plan to attend college or university part-time....4

Yes, I plan to take a correspondence course leading to a regular college degree....5

For those planning to be full-time homemakers during the year after leaving high school.

53. Do you have definite plans to continue your schooling part-time during the year after you leave high school?

(Circle one.)

No 1

Yes, I plan to attend a vocational, technical, trade, or business school part-time 2

Yes, I plan to take a correspondence course leading to vocational certification 3

Yes, I plan to attend college or university part-time 4

Yes, I plan to take a correspondence course leading to a regular college degree 5

For those planning to go to a four-year college or university, junior or community college, or take college-level correspondence courses during the year after leaving high school.

69. This question asks for your present choices among certain fields of study in college. Circle one number in the first column to indicate your first choice and one in the second column to indicate your second choice. If the exact field of study is not listed, pick the most similar one.

(Be sure to circle only one number in each column from the entire list of fields.)

	(Circle one.) First choice	(Circle one.) Second choice
Agriculture (for example, agricultural economics, agronomy, forestry, and soils)	01	01
Architecture	02	02
Art (for example, art appreciation, design, drawing, and sculpting)	03	03
Biological sciences (for example, botany, ecology, predentistry, premedicine, and zoology)	04	04
Black studies, Mexican-American studies, or other ethnic studies	05	05
Business (for example, accounting, business administration, industrial management, marketing, and finance)	06	06
Computer and information sciences (for example, programming and systems analysis)	07	07
Education (for example, business education, elementary education, and physical education)	08	08
Engineering (for example, chemical engineering, civil engineering, electrical engineering, and mechanical engineering)	09	09
English (for example, creative writing, linguistics, literature, and speech and drama)	10	10
Foreign languages (for example, French, German, Italian, Latin, and Spanish)	11	11
Health-related careers (for example, nursing, medical technology, and x-ray technology)	12	12
Home economics (for example, dietetics, family and child development, nutrition, and textiles and clothing)	13	13
Interdisciplinary studies	14	14
Journalism (for example, communications and radio and television)	15	15
Mathematics (for example, calculus and statistics)	16	16
Music (for example, music appreciation and composition)	17	17
Philosophy or religion (for example, ethics, logic, and theology)	18	18
Physical science (for example, astronomy, biochemistry, chemistry, geology, and physics)	19	19
Social sciences (for example, anthropology, economics, government, history, political science, prelaw, psychology, social work, sociology, and urban affairs)	20	20
Vocational or technical (for example, automobile repair, carpentry, computer programming, drafting, plumbing, stenography, and television repair)	21	21

For those planning to work part time during the year after leaving high school.

79. Is the work in the part-time job you plan to get after high school the kind of work you think you will be doing for most of your life?

(Circle one.)

Yes 1
Yes, if I like the work 2
Yes, if I succeed 3
No, I expect to become a homemaker 4
No, I expect to get further education so I can enter a different occupation 5
No, I expect to go into military service 6
No, I expect to change to a different type of work 7
No, some other reason 8

For All Students

81. If there were no obstacles, what would you most like to be doing during the year after you leave high school?

(Circle one.)

- Working full-time 01
- Entering an apprenticeship or on-the-job training program 02
- Going into regular military service or to a service academy 03
- Being a full-time homemaker 04
- Attending a vocational, technical, trade, or business school 05
- Taking *academic courses* at a junior or community college 06
- Taking *technical or vocational subjects* at a junior or community college 07
- Attending a four-year college or university 08
- Working part-time 09
- Other (travel, take a break, no plans) 10

91. As far as you know, how much schooling do your father and mother (or guardian) want you to get?

(Circle one number in each column.)

	Father or male guardian	Mother or female guardian
Wants me to quit high school without graduating	1	1
Wants me to graduate from high school and stop there	2	2
Wants me to graduate from high school and then go to a vocational, technical, trade, or business school	3	3
Wants me to go to a two-year or junior college	4	4
Wants me to go to a four-year college or university	5	5
Wants me to go to a graduate or professional school after graduating from four-year college or university	6	6
I don't know	7	7

96. What kind of work do YOU plan to go into? (Print the kind of work on the line below.)

_____

(for example: TV repairman, sewing machine operator, spray painter, civil engineer, farm operator, farm hand, junior high English teacher)

Appendix B

Variables Utilized for Path Models

Model I

	Item	Variables	Questionnaire Item*
Student SES Level	x_1	Family income	93
	x_2	Father's education	90A
	x_3	Father's occupation	97
Academic Achievement	x_4	Math test	
	x_5	Vocabulary tests	
	x_6	Rank in class	
School SES Level	x_7	% of fathers who are professionals	
	x_8	Influence of teachers and counselors on post-high school plans	15A
	x_9	% of teachers having masters or doctorate degrees	(30)
	y_1	Mother's educational expectations	91B
Self-Esteem	y_2	Positive attitude toward self	21A
	y_3	Feels equal to others	21C
	y_4	Able to do as well as others	21D
	y_5	Level of education planned	29
	y_6	% of 1971 graduates in 2- or 4-year colleges	(22)

*Item numbers in parentheses refer to the school questionnaire. All others refer to the student questionnaire.

Appendix B

Variables Utilized for Path Models

Model II

	Item	Variables	Questionnaire Item*
Student SES Level	x_1	Family income	93
	x_2	Father's education	90A
	x_3	Father's occupation	97
Academic Achievement	x_4	Math tests	
	x_5	Vocabulary tests	
	x_6	Rank in class	
	x_7	Participation in athletics	10A
School SES Level	x_8	% of fathers who are professionals	
	x_9	Amount of time for homework per week	7
	x_{10}	Influence of teachers and counselors on post-high school plans	15A
Self-Esteem	y_1	Mother's educational level	91B
	y_2	Positive attitude toward self	21A
	y_3	Feels equal to others	21C
	y_4	Able to do as well as others	21D
	y_5	Self concept of ability to finish college	28
	y_6	% of 1971 graduates in 2- or 4-year college	(22)
	y_7	Going to college full time or not at all	71

*Item number in parentheses refers to the school questionnaire. All others refer to the student questionnaire.